THE UNIVERSITY OF ALBERTA

FOUR FIRST-GRADERS' USE OF READING TIME DURING THE LANGUAGE ARTS PERIOD IN THEIR NATURAL CLASSROOM SETTING

by

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Four First-Graders' Use of Reading Time During the Language Arts Period in Their Natural Classroom Setting" submitted by Julianna Grace Benterud in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

The purpose of this study was to describe individual use of learning time, with particular focus on time spent in reading, by four pupils near the end of their grade one term, during the time scheduled for Language Arts in their natural classroom setting.

The four target pupils were part of the same classroom, wherein the teacher used a thematic approach in integrating the Language Arts. Four boys, one high achiever, two average achievers, and one low achiever, were chosen for observation from teacher-prepared lists.

The study was non-experimental in nature, and the data were collected through observation and coding in the classroom during the 600 minutes that were scheduled for Language Arts during the first week of May, 1983. The pupil's activity at the moment of observation was recorded on the coding sheet and generalized to the two-minute interval of the time-sampling system used. A single second observer was trained, and interobserver reliability was established from data collected in two sessions, one prior to the study and one during the study.

The data were analyzed in relation to the specific questions of the study, which were structured around the three components of Academic Learning Time -- allocated time, engaged time, and success rate.

One of the major findings of the study was that each of the four pupils had relatively little opportunity to read, and actually engaged in reading for 18 to 58 minutes during the week. This represented from three to nine percent of the total scheduled Language Arts time. Larger portions of time were available for listening and writing activities. About 40 percent of the time scheduled for Language Arts was taken up by transition, waiting, and other non-Language Arts activities. Pupils were off-task during reading, writing, and listening activities for 14 to 27 percent of the scheduled Language Arts time.

Academic Learning Time represented the amount of time that a student was engaged in an academic activity while achieving mostly high, but some medium, success. It was found that the high achiever experienced the largest amount of ALT in reading and writing, having had the most time allocated to reading, the best engagement rate, and the highest success rate. The average achievers rated next in terms of these three variables. The low achiever received the least time allocated to reading but the most allocated to writing. When considering the engagement and success variables, however, it was found that the low achiever had a larger portion of his total allocated time, especially in writing, for activities in which he achieved low success, during which he also exhibited poor engagement.

Implications of the study were drawn for the practice of teaching and suggestions were given for future observational and experimental research.

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CHAPTER 1

INTRODUCTION TO THE STUDY

> To develop the ability to read fluently requires the opportunity to read -- a simple rule of thumb. If, in a typical week of reading instruction, students only encounter 150 to 500 words in context one has to ask: How they ever gonna get good? (Allington, 1977, p.58).

In this quote, Allington (1977) was referring specifically to conclusions from an informal survey of the number of words read in context by students during remedial and corrective reading instruction, either in small groups in their classrooms or in separate remedial rooms. While Allington (1977) pointed out that the survey was informal, consisting of visits to several remedial reading sessions, unspecified in terms of age, grade, numbers of pupils, or length of lessons, the observations are nevertheless noteworthy. It was observed that, "while a myriad of instructional techniques and materials were employed, little reading was accomplished" (p.58). Allington (1977) suggested that there may have been confusion between the means of reading instruction and the end of fluent reading.

It seems strange that an argument must be made for increased reading in reading instruction, but apparently in the minds of many educators, learning to read has come to be regarded as the performance of a hierarchical series of small steps presented through skills instruction. If, however, reading is considered to be a communication process wherein the reader interacts with print and engages in reconstructing meaning from that print through testing hypotheses about the way reading works (Goodman, 1967, 1968, 1973; Smith, 1973, 1975), then skills instruction is not enough (Conklin, 1973; Allington, 1975). Allington (1977) maintained that procedures commonly used in remedial reading instruction may actually work against developing reading ability by focusing on the mastery of isolated skills at the expense of devoting time to reading in context. His underlying assumption was that "few can learn to do anything well without the opportunity to engage in whatever is being learned" (p.60), and hence, to become a proficient reader, one needs opportunity to read. Smith (1975) expressed this conviction in the simple statement that children learn to read by reading.

In recent research, Leinhardt, Zigmond, and Cooley confirmed the importance of time spent reading (Lehr, 1982; Zigmond, Vallecorsa, & Leinhardt, 1980). In 11 classrooms, more than 100 learning disabled students, aged six to 12 years, were observed to determine how they were spending their time. During the 120 days between pretesting and posttesting for reading performance, each classroom was observed, using a time-sample technique, for 30 periods of 60 minutes each. In a series of analyses, Leinhardt et al. (1980) found a positive relationship between time spent in reading and reading achievement. When comparing students of the same initial reading level, it was found that the greater the time spent in reading, the greater was the progress made in reading achievement as measured by the Diagnostic Reading Scales (Spache, 1972), Level One Reading Subtest of the Wide Range Achievement Test (Jastak, Bijou, & Jastak, 1976), and the Comprehensive Test of Basic Skills (1974). These researchers found that while increased time in oral activities, discussions, and writing activities did not result in achievement gains as measured by the standardized tests, an increase in silent reading of one minute per day could increase posttest performance by one point, and an increase of four minutes per day could result in an additional one-month gain in reading achievement at the end of the school year (Zigmond, Vallecorsa, & Leinhardt, 1980). One of the major conclusions these researchers drew from their study was that "if children with learning disabilities are not learning enough, are not making enough progress in reading, perhaps it is because they are not spending enough school time reading" (p.94).

Good and Beckerman (1978) suggested that this conclusion might be applicable beyond pupils in remedial reading classes and those considered to be learning disabled. They stated that

> pupils who fall behind their classmates academically, fall further and further behind each year they remain in school. Part of the explanation for their continuing failure to keep pace with other pupils may lie in the fact that they spend less time on academic tasks than other pupils (p.193).

Background to the Study

Since at least the early 1900s, educators and researchers have recognized time as a potent factor in the teaching-learning situation, and several approaches have been used in attempting to define the relationship (Borg, 1980). Some researchers have employed the documentation of the amount of time designated to various subject areas, and have investigated the relationship between allocated time and achievement (Rosenshine & Berliner, 1978). Other researchers have focused on the amount of time that students are attentive to or engaged in appropriate learning tasks (Bloom, 1976; Rosenshine & Berliner, 1978).

Researchers at the Far West Laboratory for Educational Research and Development in California, in the six-year Beginning Teacher Evaluation Study (BTES) completed in 1978, focused on the pupil as the unit of analysis, and took into consideration both allocated time and engaged time in learning. In addition, success rate was identified as the third component of their concept of Academic Learning Time (Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980).

In the BTES model of classroom instruction, the focus was on the central role of pupil participation in classroom processes rather than on the prediction of student achievement directly from teacher behavior (Webb, 1982). Commenting on the BTES model, Fisher et al (1980) stated that

> the general model specifies and distinguishes two measures of student learning: student classroom behavior and student achievement test scores.

> Learning takes place over time in the mind of the student. Test scores are one useful indicator of learning, but they are not learning itself. The model...implies that learning can also be measured more directly and immediately by looking at student behavior in the classroom. Hence, the central element...is student classroom learning. The model further implies that classroom instruction and environment affect student learning by first affecting the observable classroom learning behaviors of the student (p.8).

Rothkopf (1970), commenting on the need to use the individual student as the unit of analysis in classroom research, stated that "in most instructional situations, what is learned depends largely on the activities of the student" (p.325). Similarly, Flanders (1977), in his review of research on teaching, indicated a shift in thinking away from exclusive concern with the teacher variable when he stated that

> as the science (and art) of research on the effects of teaching progresses, it is very unlikely that researchers will remain satisfied with this rigid prescription. Defensible designs in which the unit of sampling is the student...can and no doubt will be developed (p.14).

Anderson (1970) stated that "the activities the student engages in when confronted with instructional tasks are of crucial importance in determining what he will learn" (p.349). Harnischfeger and Wiley (1976) highlighted the pupil's activity in learning as follows:

> All influences on pupil achievement must be mediated through pupil pursuits. No one can gain knowledge or take up new ways of thinking, believing, acting, or feeling except through seeing, looking and watching, hearing and listening, feeling and touching. These control what and how one learns (p.11).

The abundance of process-product research, in which teacher characteristics and behavior are related to achievement, is evident in Medley's (1977b) review , in which he selected 289 studies from an original 732 items dealing with the behavior of effective teachers. By comparison, relatively little research has focused on pupil pursuits as the mediating variable between teacher and setting variables and pupil learning. A few such studies have been carried out with upper elementary students (Good & Beckerman, 1978; Smyth, 1979), or with learning disabled students (Zigmond, Vallecorsa, & Leinhardt, 1980), and the BTES involved students in grades two and five. There is presently little research from which to describe the ways in which individual students in first grade, where formal reading instruction is introduced, utilize time for specific kinds of reading activities.

Purpose of the Study

The main purpose of the study was to describe the individual use of learning time, with particular focus on time actually spent engaged in reading, by four pupils near the end of their grade one term, during the Language Arts period in their natural classroom setting. The questions and description were structured around the components of the BTES concept of Academic Learning Time: allocated time, engaged time, and success rate.

Specific Research Questions

Allocated Time

1. How much classroom time is allocated to each of the

categories of the Language Arts (reading, listening, speaking, viewing, writing) for each pupil?

2. How much time is allocated to the various kinds of activities within the reading category, for each pupil?

Engaged Time

1. How much of the time allocated for various kinds of reading activities is utilized by each pupil through engagement in that activity?
2. Are there marked differences in levels of engagement in reading activities among high, average, and low achievers?
3. How does each pupil utilize scheduled and allocated Language Arts time other than in engagement in reading?

Success Rate

1. How much time is allocated for each pupil to reading activities in which that pupil can achieve high success?
2. How much of the time is each pupil engaged in reading activities in which that pupil achieves high success?

Definition of Terms for the Purposes of This Study

Academic Learning Time: the amount of time that a student spends attending to academic tasks while also performing with a high rate of success (BTES Newsletter, October, 1978).

Allocated or allotted time: the amount of time available to student for particular learning activities.

Engagement time or time on-task: the time during which a pupil is observed to be oriented to, and apparently engaged in, the appropriate learning task.

Engagement rate: the percentage of the allotted time that a pupil appears to be engaged in the appropriate learning task.

Instructional setting: the type of group in which a pupil is involved: whole-group, small-group, or individual.

Observer-assessed success rate: the success rate as rated in relation to the performance of the individual pupil, judged on the basis of observable pupil reactions to the task and error-rate, where available.

Pupil achievement: pupil performance as identified by teacher rating.

Reading: a communication process wherein the reader engages in reconstructing meaning from print.

Reading activities: activities during which the pupil is involved in reconstructing meaning from print, as well as word-recognition and comprehension activities traditionally considered to be part of reading instruction.

Scheduled time: the amount of time officially designated on the time-table to various subject areas.

Uninterrupted Sustained Silent Reading (USSR): a period during which pupils and teacher individually read silently.

Delimitations of the Study

This study was delimited to a consideration of pupil use of time only in the Language Arts, and to only academic learning. No attempt was made to deal with time spent in other subject areas or with affective learning, which undoubtedly contribute to the total growth of the child. The focus of the study was on the use of reading time by four individual first-grade children during the time scheduled for Language Arts in their classroom. The children were part of the same class, and were taught by the same teacher. Observations took place during the scheduled Language Arts periods over one week at the beginning of May.

Limitations of the Study

The restrictiveness of the sample is acknowledged as a factor limiting the generalizability of the study. While generalizing the behavior at the moment of observation undoubtedly resulted in some error, this error was minimized by using the time sampling procedure over a sufficiently large sample of moments (600 minutes). Observations had been scheduled earlier, but were postponed in a joint decision by the researcher and teacher due to deviations from routine at the school. Although the observations took place late in the school year, the week chosen for observation was described by the teacher as a "pretty normal kind of week", with no more than the average interruption of regular routine. The week of observed Language Arts periods were assumed to be representative of the target pupils' experiences over a longer period of time in the latter part of grade one.

While the influence of observers in a classroom is impossible to determine, both the teacher and the pupils were accustomed to classroom observers, and neither teacher nor pupils were informed of the identity of the individuals who were the focus of observations. In fact, at the completion of the observation, the teacher was unable to identify who had been the target pupils. The specific nature of the observation was not revealed to the teacher until after its completion. It was therefore assumed that the behaviors observed were not altered because of the observations in the classroom.

Significance of the Study

The Edmonton Public School District stipulated in figures provided for 1982-83 that, at the grade one level, a minimum of 35 percent or 510 minutes per week should be allocated to the Language Arts. The actual average instructional time that was allocated to the Language Arts at the first-grade level was 44 percent, or 645 minutes per week. While these figures indicate that first-grade teachers in this district are allocating, on the average, almost half of their instructional time to the Language Arts, it cannot be inferred that this time represents productive learning time of individual pupils. Nor can any interpretations be made concerning the distribution of allocated or productive learning time among the several facets of the Language Arts -- reading, writing, listening, speaking, and viewing -- for individual pupils.

There is presently relatively little data regarding the academic engaged time actually occurring in schools (Rosenshine, 1977). Researchers have not yet provided guidelines concerning reasonable expectations of engagement rates for different students at various ages participating in various kinds of teaching-learning situations. Exploration is only beginning in considering the question of how much engaged time is enough for individual students in a subject area, or in various aspects and activities of a subject area.

The major importance of this study is the addition of data to that already collected through observation of individuals in their classroom experiences; it is only as such data from various sources are gathered and analyzed that the answers to some of the uncertainties concerning engaged time and learning can begin to be answered. It is hoped that this study will increase understandings about engaged time and learning, specifically by providing a description of the reading experiences of four first-grade pupils during their Language Arts instruction time. It is anticipated that the observations of this study will generate further questions and hypotheses about the ways in which children learn, and that these will be examined in future research. More immediately, the observations of this study may inspire teachers to become more conscious of how various individual pupils in their classrooms are using their time, and to seek ways of assisting students to increase the efficiency of their learning.

CHAPTER 2

REVIEW OF RELATED RESEARCH AND LITERATURE

In this chapter a review is presented of the theoretical background relating to time and learning, which contributed to the development of the concept of Academic Learning Time. Research is then reviewed in relation to the three components of Academic Learning Time -- allocated time, engagement rate, and success rate. A summary concludes the discussion of related research and literature.

Theoretical Background Relating to Time and Learning

In commenting on time in reading programs, Guthrie (1980) stated that

> we all nod to Benjamin Franklin's adage that time is money. Time and money can be spent; they can both be saved, or squandered. Most fruitfully, they both can be invested...In schools, the resource of time is invested for learning and knowledge, supposedly. But too often, little account is made of how time in classrooms is spent. (p.500)

More than a century ago, educators recognized time as an important variable in school learning, and for at least the past sixty years, there has been widespread concern for improving efficiency of use of school time (Borg, 1980). As documentation of such interest, Borg (1980) cited a report by Thompson in 1915, in which programs attempting to make better use of school time were reviewed.

The current increased interest in the time variable is traceable to Carroll's (1963) model of school learning, in which he identified five factors that relate to the time needed for a given pupil to learn a given concept:

1. Aptitude - the amount of time an individual needs to learn a given task under optimal conditions of instruction.
2. Ability - the individual's ability to understand instruction.
3. Perserverance - the amount of time an individual is willing to engage actively in learning.
4. Opportunity to learn - the time allowed for learning.
5. Quality of instruction - the degree to which instruction is presented so that it will not require additional time for mastery beyond that required in view of aptitude.

The basic thesis of Carroll's (1963) model is that individual students differ in the amount of time they need to master a given unit of learning to some set criterion.

Bloom (1974) credited Carroll with producing "a major shift in our thinking about education and educational research" (p.683) by establishing time as the central variable in school learning. While time had long been an important variable in labortory studies of human learning, Bloom (1974) stated that it has only recently become a prominent variable of school-based studies of learning. In constructing his school learning model, Bloom (1974, 1976) built on the work of Carroll, retaining time as a central variable.

Bloom identified two major factors that influence achievement and time on-task: student characteristics, including cognitive and affective characteristics; and the quality of instruction. In discussing differences in learning achievement between nations, states, and communities, while conceding that there can be no simple explanation, Bloom maintained that "the percentage of time the student spends on-task in the classroom may be a powerful variable underlying most of these differences"(Bloom, 1974, p.687).

Like Carroll and Bloom, Harnischfeger and Wiley (1976a, 1976b) considered the time concept central to their model of the teaching-learning process. The influence of all other variables such as pupil characteristics, teacher characteristics, and curriculum, was perceived to be mediated through two basic time factors in affecting achievement: total time needed for a learning task by a particular pupil, and the time actually spent on that task by that pupil. Reproduced in Borg's article (1980, p.39), the Wiley-Harnischfeger model illustrates these authors' concept of the pupil and teacher variables that can influence needed learning time and active learning time. It was this analysis of needed learning time and active learning time that spawned the development of the BTES concept of Academic Learning Time (Borg, 1980).

Academic Learning Time

The Beginning Teacher Evaluation Study (BTES) was conducted over the six years between 1972 and 1978 by the Far West Laboratory for Educational Research and Development, and represented the joint efforts of Berliner, Cahen, Filby, Fisher, Marliave, Dishaw, and Moore (Berliner, 1979). The purpose of the BTES study was stated by these researchers as identifying "teaching activities and classroom conditions that foster student learning in elementary schools" (Fisher, Berliner, Filby, Marliave, Cahen & Dishaw, 1980, p.7). One of the major achievements of the study was the creation of the concept of Academic Learning Time (ALT), which the researchers contended enables measurement of individual pupil learning by noting observable variables of student behavior in the classroom. ALT is defined as "the amount of time a student spends attending to academic tasks while also performing with a high rate of success. The more ALT a student accumulates the more he/she can be assumed to be learning" (BTES Newsletter, October, 1978, p.1). The BTES researchers argue for the validity of ALT as an indicator of student learning on the premise that high correlation has been established between ALT ratings and achievement test scores, and ALT has the added advantage over achievement tests of providing a means of assessing on-going, in-process learning. The three variables included in ALT are allocated time, engagement rate, and success rate. In the following section, each of these variables is discussed with reference to related research concerning its relevance for learning.

Allocated Time

In the BTES research, allocated time referred to the amount of time the student has available to work, and it set the upper limit on the amount of ALT a student could have in a particular classroom (Fisher et al., 1980).

Borg (1980) outlined early studies of allocated time in which descriptive data were collected on the time that was designated to different subject areas by different school districts. Holmes in a 1915 survey, regarded as one of his major findings the revelation of great divergence of time allocations to various subjects among elementary schools of fifty American cities. Mann's 1928 survey in schools of 444 American cities revealed a similar extreme variation in the total amount of time given to any subject. Borg (1980) noted that this tremendous variability in allocated time has continued to be a consistent finding in other studies, including the BTES research, which showed variability among classrooms rather than among school districts in allocated time.

A number of researchers have investigated the relationships between allocated time and achievement. Harnischfeger and Wiley (1976a) reported Wiley's reanalysis of the data that had been gathered by Coleman and his associates in 1966 for the report, Equality of Educational Opportunity. Wiley reanalysed the data obtained from the sixth-grade sample in the Detroit metropolitan area, focusing on quantity of schooling and measures of verbal ability, reading comprehension, and mathematics achievement. Based on this reanalysis, Wiley predicted substantial increases in achievement if increases were effected in attendance, number of days in school, and hours in the school day. As Borg (1980) points out, however, Wiley's statements were predictions based on Coleman's data, and did not represent actual changes due to adjustments in the quantity of schooling.

In 1968, Welch and Bridgham failed to find a correlation between the amount of time allocated to a unit in physics instruction and class achievement performance. Smyth (1979) cites other studies in which relationships between allocated time and achievement have been investigated. Felsenthal and Kirsch (1978), in their study of 475 grade four, five, and six students, reported no significant correlation between time allocated to reading and reading performance. On the other hand, Harnischfeger and Wiley (1977), in a study of eight fifth-grade reading classes found that some classes received 12 times as much instruction time as other classes on certain fundamental skills, and that higher scores in reading correlated with greater amounts of time allocated to reading. Smyth (1979) points out that the apparent inconsistencies in studies relating to allocated time should not be interpreted to mean that the amount of time allotted makes no difference in achievement. Since many of the studies did not involve classroom observation, the findings may reflect inaccuracies in recording of time allocations. As well, most researchers have considered group performance of classes, and hence performance of individual pupils was obscured.

The BTES study differed from previous research on allocated time in several ways (Borg, 1980). First, time allocated was measured in relation to highly specific topics within each content area, rather than in relation to broad content areas like reading or mathematics. Second, both teacher logs and observer records provided data. Third, the data were collected over two relatively long time periods: six weeks during October through December, and seventeen weeks during January through April. Finally, data collected related to six individual target pupils in each class rather than to the group as a whole. The data collected in the BTES study was thus more detailed and comprehensive than data produced in former studies on the relationship between allocated time and achievement.

The BTES researchers found widespread variation between classrooms in allocated time as measured by data obtained from teachers' logs over an average of 90 days of instruction from October to May. In a table reporting this data, Berliner (1979) indicated differences among four fifth-grade classes in various aspects of allocated reading time. For example, a range of from 63 to 885 minutes was allocated to oral reading; time allocated to silent reading ranged from 724 minutes to 3640 minutes; and creative writing was given only 56 minutes in one class and 573 in another. If, as McDonald noted in his 1975 study of allocated time in mathematics, students simply do not do well on portions of tests relevant to topics they have not been taught (Rosenshine & Berliner, (1978), then these differences in time allotment may well be accompanied by differences in achievement. In fact, the BTES researchers found that in their study, students who were allocated more time in a particular content area of the curriculum achieved at higher levels than those who were allocated less time in that content area. The BTES researchers therefore concluded that the amount of time teachers allocate to instruction in a particular curriculum content area is positively associated with student learning in that content area (Fisher et al, 1980).

Opportunity to learn is a concept similar to, but more sophisticated than, allocated time. Rather than dealing only with time allocated to broadly defined content areas such as reading or mathematics, opportunity to learn involves the coverage of specific academic content, often related to test items. Rosenshine and Berliner (1978) reviewed numerous studies and comment that

> content covered or 'opportunity to learn' (Carroll, 1963) has been studied in many ways, including inspecting the contents of textbooks used (Pidgeon, 1970); asking teachers to indicate the percent of students who have had opportunity to learn each item on the test (Husen, 1967; Comber & Keeves, 1973; Chang & Raths, 1971); counting the number of pages of the common textbook covered during the semester (Good, Grouws, & Beckerman, in press); coding the content in a short presentation which was relevant to the exam questions (Armento, 1977; Rosenshine, 1971; Shutes, 1969); counting the number of words which the teacher attempted to teach (Beez, 1968; Carter, 1969; Brown, 1969; Barr, 1973); counting the amount of mathematics problems covered (McDonald, 1975); comparing the results of different curriculum programs on general and on curriculum-related post-tests (Walker & Schaffarzick, 1974); and coding the level of the workbook the students completed just before they took the post-test (Rosenshine, 1976) (p.5).

In more detail, Borg (1980) reviewed four studies which defined opportunity to learn in terms of teacher estimates of content covered (Husen, 1967; Comber & Keeves, 1973; Chang & Raths, 1971; Borg, 1978). While acknowledging various problems in design, Borg (1980) found significant relationships between content covered and achievement in these studies. Similarly, of the 14 studies reviewed by Rosenshine & Berliner (1978), in all but one, significant correlations between opportunity to learn and achievement were reported.

In assessing the relevance of allocated time and opportunity to learn as variables related to learning, Borg (1980) conceded that they are rather crude measures; yet they appear to be "sufficiently powerful to yield significant relationships with achievement across a wide range of definitions and research methodologies" (p.55). He agreed, however, that in attempting to account for pupil achievement, such measures must be supplemented with measures of more sophisticated variables such as engagement rate and success rate. Jackson (1977) put this variable into perspective when he stated that

> we must keep in mind that time itself is valueless. It acquires value chiefly because it marks the expenditure of a precious commodity -- human life...let us not seize too quickly at remedies for our educational ailments that call for little more than adding days or hours to our present efforts. The real key lies in making better use of the time we already have (p.38).

Engaged Time

A major conclusion reached by the BTES researchers was that "the proportion of allocated time that students are engaged is positively associated with learning" (Fisher et al., 1980, p.16). Engaged time is defined as the portion of allocated time during which the student is actively working on or involved in relevant tasks (Borg, 1980; Confrey, 1982). Engagement rate, as defined by the BTES researchers, refers to the percentage of the allocated time that the student appears to be paying attention to the task (BTES Newsletter, 1978). As such, studies of engagement have their roots in early studies of pupil attention, or time on task.

Early studies. Early studies tended to focus on group attention of pupils as a direct indicator of teacher effectiveness. Illustrative of this concept is Knudsen's statement (1930) that when less than 80 percent of the class was attentive, the teacher was judged to have a control problem.

One of the prominent features of early studies was that the percentage of time that pupils were observed to be attending to their school work was relatively high (Jackson, 1968). In 1924, French observed recitation periods in 26 elementary and junior high classrooms, and found students to appear to be attentive for 91 and 94 percent of the time. Bjarnason, in a study of two elementary classrooms in 1925, found average attention levels of 90 and 81 percent. A range of attention from 90 to 98 percent was found in Blume's 1929 study in 17 eighth-grade classes. Edminston and Braddock conducted a more extensive study in 200 classrooms in 1941, and found variations of attention from 80.6 to 88.2 percent.

Morrison's technique, developed in 1926, was used almost exclusively for the measurement of attention over the following 20 years of research. The technique involved the judgements of an observer, who positioned himself at the front and side of a class so that he could see the face of each student without being in their direct line of vision. The observer counted and noted on a score card the number of pupils he judged to be attentive each minute of the period. The criteria for assessment of attentiveness included the student's eye expression, physical posture, and motor activity.

The use of Morrison's technique gave rise to a number of studies directed towards testing its validity. In a study of 78 junior and senior high school classes, Brueckner and Landenberg (1933) extended Morrison's observation cycle to three minutes instead of one minute, and found that variability did not result from this change. Shannon's 1936, 1941, and 1942 studies also dealt with the validity of Morrison's technique, and although he questioned the usefulness of the method, his data interpreted by others tended to lend support to its reliability and validity as a measure of classroom attention (Hudgins, 1967).

These early studies of attention might be criticized on several grounds. First of all, the focus was on pupil attention as an indicator of teacher effectiveness rather than as a factor in pupil learning. It appears that the desirable classroom situation was assumed to exist when all the students were looking at the teacher instructing at the front of the class. Also, early studies were group-oriented, involving total-class scores, thus obscuring individual variations in attention. No attempt was made to examine multiple factors that might influence the degree of attentiveness of individual pupils. However, these pioneer studies should not be discounted, as they did reflect recognition of attention as an important variable in classroom teaching-learning situations, and provided the theoretical and methodological groundwork for later studies.

Attention and achievement. Since the late 1950s, considerable research interest has focused on attention as a factor relating to pupil achievement. In 1956, Morsh studied classroom behavior in an Air Force school, and found a correlation of -.58 between achievement and student behavior indicating inattention (Lahaderne, 1968). Edminston and Rhoades (1959) in a study with Air Force trainees, found the same correlation between amount of time off-task and predicted test score for individual students. In a study of four sixth-grade classrooms, Lahaderne (1968) found correlations of .37 to .53 between observable attention and achievement. Bloom (1974) reported that in the overt/covert observational studies by his students, Anderson (1973) and Ozcelik (1973), the amount of student on-task time was highly predictive of student achievement. In a study of first-graders' attention and reading achievement, Samuels and Turnure (1974) found a positive correlation of .44 between classroom attentiveness and word recognition. Cobb (1972), in a study of two fourth-grade classrooms, found that attentiveness during arithmetic classes was highly predictive of achievement. Stallings and Kaskowitz (1974), in coding pupils as being engaged only when they were clearly working on reading or mathematics, found correlations of .3 to .6 between engaged time and achievement. Thus, a substantial body of research, with various types of pupils across a number of settings, supports a positive correlation between pupil attention and achievement.

Pupil engaged learning time. Smyth (1979) reports some rather disturbing statistics that have come out of studies of pupil time on-task. McDonald, in 1967, found that the median engaged time in reading and mathematics for grade two and five classrooms in a California sample was usually under a total of 90 hours for the entire school year. In another study of grade two reading and mathematics classes, Berliner, Fisher, Filby & Marliave, in 1976, suggested that some pupils may be engaged in learning in these areas for less than 40 hours in the school year. Considerable variations among students within classes in terms of engagement rates were found by Filby, Marliave, & Fisher, in 1977. In reading and mathematics at the grade two level, engagement rates varied from 37 percent to 74 percent and from 23 percent to 91 percent. Smyth (1979) in a naturalistic study of four sixth-grade students in the content areas of reading and mathematics also reported considerable variation in engaged time. Among the four pupils, engagement rates varied from 38 percent to 78 percent of allotted time, representing serious differences in accumulated engaged time when extrapolated over a full school year. The implication of these statistics is forceful. If, as research appears to support, a positive correlation obtains between engagement time and learning, the presence of low engagement rates also indicates low levels of learning for some individuals.

In an attempt to discover some of the factors underlying this disturbing implication, Good & Beckerman (1978) conducted a naturalistic study of time on-task in sixth-grade classrooms in two schools, one serving pupils from families representing the full range of socioeconomic status, and the other serving predominantly pupils from working-class and lower income homes. The main purpose of the study was to find out whether pupil involvement was different for high, middle, and low achievers. In addition, the researchers wanted to find out whether pupil involvement was higher in some subjects than others, and whether certain types of classroom activities were associated with higher or lower levels of pupil involvement. Coders collected 14 hours of observational data of four major types in each classroom. Data coded for each pupil included the instructional setting (large or small group, or individual), type of activity, subject matter, and level of task involvement or attention. To code involvement, Kounin's system, which is a variation of Morrison's observational method, was used. Engagement was inferred from observable behavior coded according to four categories: definitely involved, definitely not involved, can't tell, or misbehaving. Good and

Beckerman (1978) found that high achievers were more involved, or spent more time on-task than low achievers. In addition, teachers had identified eight percent more girls than boys as high achievers, and girls as a group were more involved than boys. Regarding involvement variations according to subject, pupils were observed to be most involved during mathematics and spelling. The setting appeared to have an influence on pupil involvement; pupils were found to be most involved in a small group led by a teacher, less involved in a large teacher-led group, and least involved during individual work. Yet interestingly, the greatest percentage of time (38 percent) was spent in working individually. When time was included during which pupils were in small groups, but working primarily on their own assignments, pupils were found to be working privately for more than half of the instructional day. The type of task also appeared to be a major factor in involvement; pupil involvement appeared to be much greater on tasks assigned by the teacher than on tasks chosen by the pupil. Pupil involvement varied considerably, from 60 percent to 82 percent between classrooms, and it was noted that involvement was consistently higher in the classrooms representing the full socioeconomic range, and lower in classrooms representing the lower middle-class range. These researchers suggested that in addition to achievement, other factors relating to attention in the classroom may be sex, subject, setting, self- or teacher-chosen tasks and socioeconomic status.

Success Rate

A high success rate is an important component of ALT (BTES Newsletter, October 1978). The BTES researchers concluded that the proportion of time that reading or mathematics tasks are performed with high success is positively associated with learning (Fisher et al., 1980). Romberg (1980) indicated that success rate, as used in ALT, was intended to reflect the degree to which the student understood the learning task. Learning was considered to be a process of moving from not knowing to knowing. A task which is extremely difficult and on which a student produces few correct responses does not result in movement from not knowing to knowing, and therefore produces little learning. Fisher et al. (1980) suggested that while students likely produce some errors on new learning, they move toward correct performance through guided practice. Learning becomes well established through further practice with few errors. The results of the BTES research suggested "that for learning of basic skills in the elementary grades, the stage of successful practice (consolidation) is particularly important to the thorough mastery of concepts and procedures" (Fisher et al., 1980, p.17). These researchers caution, however, that it is not desirable for pupils to spend all of their time on tasks they can perform completely correctly, as new learning inherently implies initially imperfect understanding. The BTES researchers had originally hypothesized that a high portion of engaged time with medium success would produce the most learning. However, they subsequently found that the most desirable combination for effective learning included high portions of engagement in both high-success and medium-success tasks, with somewhat more activities at the high success level. The proportion of time that reading or mathematics was performed with low success was found to be negatively correlated with learning.

Three broad categories were used to define pupil success rate (Block, 1980; Romberg, 1980; Fisher et al., 1980). High success rate involved situations where the student made no errors aside from a few resulting from carelessness. Medium success was indicated if the student had partial understanding but made some errors. If a student did not understand the task and made correct responses only at about a chance level, low success was indicated. Calculating success rate involved a two-step process: first, observing and classifying the student's level of success on each task as high, medium, or low; and second, computing the percentage of instructional time that each student spent doing a particular task at a particular success level.

The BTES researchers found that, on the average, the grade two pupils spent half their time on tasks in which they experienced high success (BTES Newsletter, October 1978). Grade five students spent slightly less than half their time on tasks in which they experienced high success. An average of only about five percent of students' time in both grades was spent on activities with low success. It was found that students who spent more time than the average in activities wherein they performed at a high level of success had higher achievement scores in the spring, better retention of learning over the summer, and more positive attitudes toward school.

Summary

In reviewing the related literature and research, the theoretical background relating to time and learning was discussed. The learning models of Carroll (1963), Bloom (1974), and Harnischfeger and Wiley (1976) were seen to contribute to the development of the BTES concept of Academic Learning Time (ALT), defined by the researchers as the amount of time a student spends attending to academic tasks while also performing with a high rate of success.

Each of the three components of ALT -- allocated time, engagement rate, and success rate -- was discussed in terms of related research concerning its relevance for learning. While research dealing with allocated time and achievement has been fraught with problems in design, Borg (1980) was able to conclude that although allocated time is a rather crude measure, it is nevertheless useful for investigating relationships between time and achievement when used in conjunction with other measures.

Research concerning engaged time has its roots in studies of attention. Early studies tended to focus on attention as an indicator of teacher effectiveness, while numerous later researchers showed a correlation between student attention and achievement. BTES researchers included the variables of allocated time and engagement rate, but also considered success rate as an important variable in learning. These researchers concluded that allocated time, engagement rate, and success rate were each positively associated with learning (Fisher et al., 1980).

CHAPTER 3

DESIGN OF THE STUDY

The nature of the study, the sample, and the selection of the instrument for observation are discussed in this chapter. The pilot study and changes in the coding system are reported. Descriptions are given of the derived observation categories, the time sampling procedure, the density and duration of observations, and observer training and reliability. A summary concludes the discussion of the design of the study.

Nature of the Study

The study was descriptive in nature, with the descriptions based on codings of observations of the behaviors of four pupils in their classroom setting. As the purpose was to illuminate how individual first-grade pupils make use of available Language Arts learning time, nonparticipant classroom observation was considered an appropriate procedure for gathering relevant data. While the explanation of why pupils utilize time as they do goes beyond the scope of this study, the observation and description of naturally occurring human behavior is, as identified by Charlesworth and Bart (1976), an important first step in understanding that behavior.

The study was nonexperimental, in the sense that the term was described by Drew (1980):

> In some ways nonexperimental research may be thought of as the mirror image of experimentation. Non-

> experimental researchers tend to observe, analyse, and describe what exists rather than manipulating the variable under study. Nonexperimental reseachers do not use direct control (such as in a laboratory) in the same fashion that is characteristic of experimentation. Additionally, nonexperimental research is more often conducted in the natural environment than experimentation (p.31).

This research study was conducted in the natural classroom setting of the subjects, and precautionary measures were taken to avoid disrupting or influencing normal occurrences. Tunnell (1977) described such studies as "non-contrived research" (p.428), in which the subjects' experiences are assumed to continue as they would be regardless of the presence or absence of the researcher.

The Sample

Description of the Classroom

A grade one classroom was considered to be an appropriate setting for the present study. This was partly because of the researcher's interest and experience in that area, but also because little research has been done wherein ways in which individual students at that level utilize time for specific kinds of reading activities is described.

Five first grade classrooms were visited by the researcher during the pilot study. The classroom that was selected from these for the larger study was recommended by the consultant for teacher effectiveness as a classroom where reading was effectively being taught as a part of the integrated Language Arts program. The classroom was described by the principal of the school as heterogeneous in terms of socioeconomic and ability levels. Of the 23 pupils, 12 were boys and 11 were girls. The room was self-contained, and the class was taught by the same teacher throughout the day, except when the children were taken out for music instruction.

The teacher was female, and was identified by the consultant for teacher effectiveness, and by the principal, as an excellent teacher of the Language Arts. Her training was completed recently and had focused on special education. She had taught special education classes for two years and was teaching grade one for the second year. She was most willing to allow the researcher to conduct the study in her classroom. The teacher had been enrolled in a teacher effectiveness program throughout the school year, and since that program involved bi-weekly classroom observations by the principal and consultant, both the teacher and the pupils were accustomed to the presence of observers.

In an interview with the researcher, the teacher expressed her philosophy that reading, writing, listening, and speaking should be integrated with one another, and she used a thematic approach to teaching the Language Arts. The theme was chosen on a weekly basis, and the reading, writing, speaking, listening, and viewing activities revolved around that theme. The theme of "Arbor Day" was in implementation during the week of observational data collection.

The children of the class were arranged in groups of four, as illustrated in the diagram of the classroom (see Figure 1). In the figure, the children are identified only as male

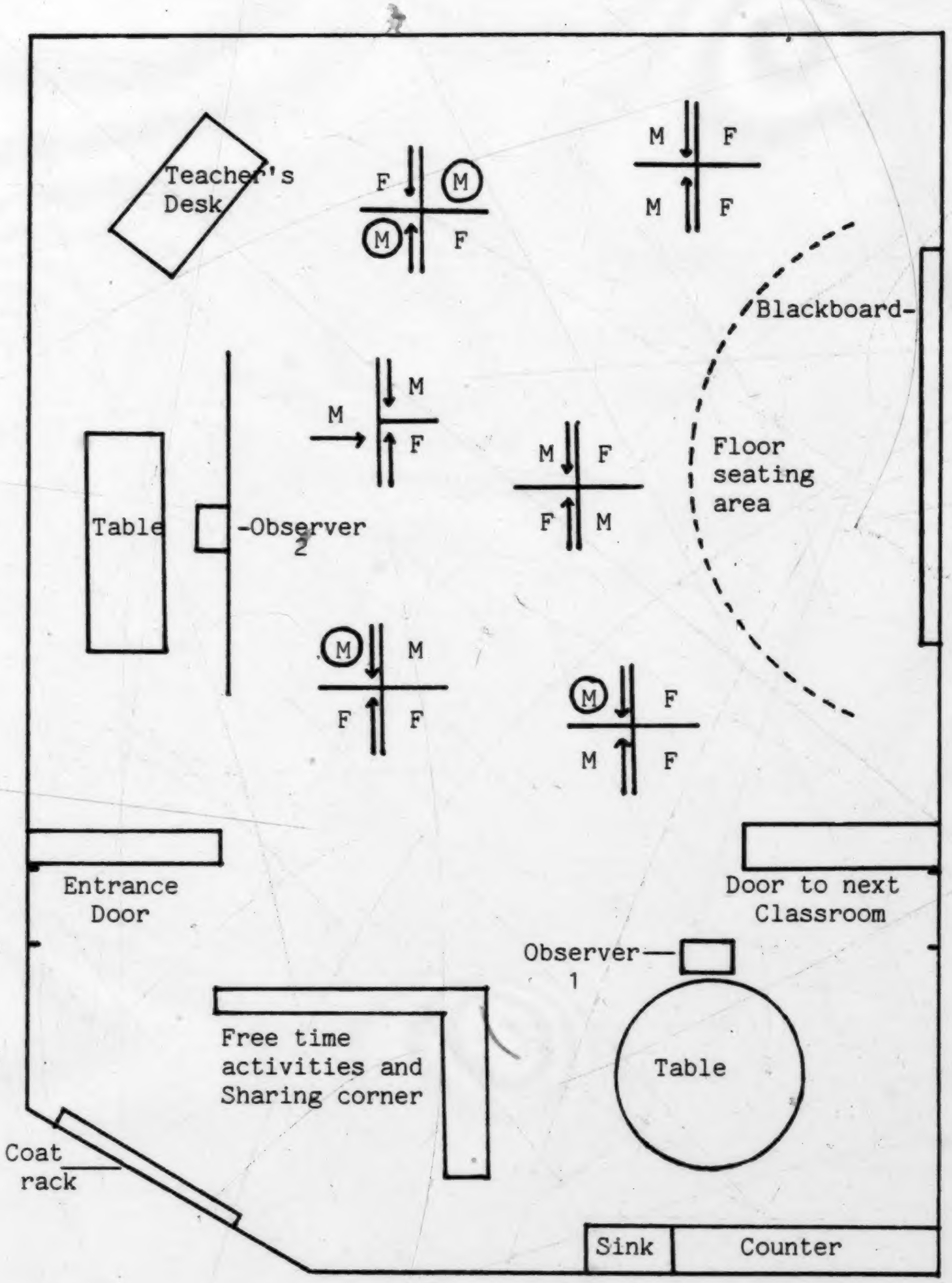

Teacher's Desk
F
M
M
F
M
F
M
F
Blackboard-
M
M
F
Table
-Observer 2
M
F
F
M
Floor seating area
M
M
F
F
M
F
M
F
Entrance Door
Door to next Classroom
Observer 1
Free time activities and Sharing corner
Table
Coat rack
Sink
Counter

Figure 1. Diagram of the classroom.

(M) or female (F), and the letter is circled to identify the target pupils of the study. The direction that the childrens' desks were facing is identified by the arrows.

Language Arts time was scheduled from 9:00 A.M. until 10:30 A.M. on each day of the week. In addition, the time block from 10:45 A.M. until 11:30 A.M. was scheduled for Language Arts on Mondays, Wednesdays, and Fridays. Only one allocated 15-minute USSR (Uninterrupted Sustained Silent Reading) period was observed, but the teacher reported that this took place at various times during the day on an average of three times per week.

The ninety-minute time block at the beginning of each day was initiated with a thematic spelling activity, during which time instruction focused on word identification and phonics skills. The remainder of the time was devoted to various Language Arts activities relating to the theme, and utilizing a variety of materials including stories, poems, songs, letters of communication, library books, charts, and duplicated material. While the class generally operated as a large group with some assignments of individual seatwork during this time, some individuals were working individually on alternate materials when the group work was considered to be too difficult for them.

During the additional forty-five minutes designated to Language Arts instruction on Mondays, Wednesdays, and Fridays, cardboard dividers were erected to separate the pupils seated in groups of four from contact with each other. For the first thirty minutes, the teacher generally gave extra help to a small group of students identified as needing additional instruction. Students involved in the resource room program also were taken out during this time. The remainder of the class was involved in either finishing up written assignments from the first time block of the morning or in working independently and at their own speed in one of the workbooks of the reading series or on duplicated worksheets. The last 15 minutes before the lunch break at 11:30 A.M. was given to "sharing", which normally took place in the sharing corner, with pupils seated on the floor in a circular arrangement. The entire mornings were characterized by considerable movement of children from working at their desks, individually and in small groups, to groups seated on the floor or around a table.

Selection of the Target Pupils

A stratefied sample was obtained by having the teacher list the names of all the children in the class under the headings "High", "Average", or "Low", according to her judgement of their general achievement in reading. A decision was made to limit the sample to boys, as they as a group have emerged in several research studies as those pupils causing teachers great concern due to lower performance in reading (Dykstra & Tinney, 1969; Gates, 1961; Stanchfield, 1971). Children who were learning English as a second language and those repeating grade one were considered atypical as readers, and were removed from the lists. These exclusions involved only two boys, both new to the English language. The sample of four pupils was selected from those remaining on the lists, with the constraint that the sample would try to be representative of the assumed normal distribution of pupils across achievement levels. The sample therefore included two boys from those listed as average achievers, and one boy from each of the lists of high and low achievers. As a precaution against possible inadvertent biasing of teacher behavior or activities involving the target pupils, the teacher was not informed about student selection until the completion of observations. Fictitious names were assigned to the target pupils, and these were used on the coding sheets and samples of written work throughout the study.

Selection of the Observation Instrument

This study focused on some aspects of the three areas of Academic Learning Time defined in the Beginning Teacher Evaluation Study, (Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980), and the coding system developed as part of that study provided the basis for the coding procedures used in the present study. Smyth (1979), in a study of four sixth-grader's use of learning time in reading and mathematics, found the BTES observational and coding system to be more appropriate to his purposes than a large number of others. However, he found that he was able to delete categories that were irrelevant to his particular research problems. The present study is much more restricted in scope than either Smyth's (1979) or the BTES research, and although the general form of the BTES coding sheet was retained, the categories were changed, deleted, or developed according to their capactiy to yield data relevant to the stated research questions. In the proposed coding system, the categories that were considered relevant were: time, engagement, instructional setting, area of language arts, partner in interaction, source of content, length of unit, assigned or chosen, level of difficulty, and remarks.

The time sampling procedure was considered appropriate because the researcher was interested in the total amount of time spent in various ways by more than one subject (Jackson, Della-Piana, & Sloane, 1975). Although the BTES observation system allowed for simultaneous observation of up to six pupils using an observation cycle of from three to six minutes, the present study proposed to observe four pupils in an observation cycle of three minutes or less. Changes in the proposed coding system were effected during the pilot study.

Pilot Study

A pilot study was conducted over a seven-week period from February to April, 1983. Five grade one classrooms were visited, including those that were recommended by consultants.

The pilot study provided the researcher with the opportunity to alter and refine the proposed coding system to enable observers to account for pupil use of time during Language Arts periods in various types of classrooms. During the pilot study, it was also possible to experiment with the time-sampling procedure in terms of the number of pupils observed, the length of the cycle, and the standardization of the moment of observation for more than one observer.

The pilot study afforded an opportunity for the researcher to gain experience and develop efficiency in the use of the coding system. The researcher became familiar with the setting and routine of the classroom observed in the larger study, and was able to experiment with various observer locations and various ways to cope with pupil movement in the classroom during observation. In addition, an assessment was made of the degree to which the presence of the non-participant observer was likely to affect the behaviour of the teacher and pupils. A small quantity of data was processed to determine whether the coding system yielded the information sought, and to investigate approaches to processing the data in the larger study.

During the pilot study, a grade one classroom for the larger study was located, and permission was obtained from the school board, the teacher, the principal, and the parents of the children in the classroom. The number of pupils to be observed, and their distribution according to achievement levels, were determined, and the target pupils for the study were selected.

The decisions, alterations, and information generated during the pilot study are described in further detail in the following sections which discuss various aspects of the design of the study.

Changes in the Coding System

During the seven weeks from February to April, 1983, the researcher altered and refined the proposed coding sheet to accommodate the occurrences in the five grade one classrooms visited during their Language Arts periods. Several changes were made:

Reduction of the Time-Sample Cycle

The time-sample cycle was reduced from the proposed three minutes to two minutes. It was found that four individual pupils could be observed, and their behaviors coded, within the two-minute span.

Standardization of the Moment of Observation

Standardization of the moment of observation and of the interval between observations for each pupil was achieved by premarking the coding sheets in 30-second divisions. Each pupil was to be observed at the beginning of his 30-second interval. That is, if pupil one was observed at 9:00:00, pupils two, three, and four would be observed at 9:00:30, 9:01:00, and 9:01:30 respectively. At 9:02:00, pupil one would again be observed, and the rotation would continue. The procedure found most facilitative in adhering to the time structure was to place a digital watch, which clearly displayed minutes and seconds, on the inner side of the wrist of the hand holding the clip-board and coding sheets. This arrangement allowed the observer to shift rapidly between focusing on the time, the pupil, the classroom situation, and the coding sheet.

Addition and Changing of Categories

It was found necessary to add some categories to the coding sheet. "Wait" and "Transition" were added to account for pupil time spent in waiting for others and in changing from one activity to another. "Blackboard" was added as a possible "Source of Content", as some classrooms were found to use material on the blackboard for reading or writing activities. In the "Assigned/Chosen" category, "Assigned" was subdivided into "General" and "Specific" to account for the degree to which pupil choice in an activity was externally controlled. "Level of Difficulty" was changed to "Success Rate -- High, Medium, or Low". This change was made because the rate of success seemed to give a more objective description of a pupil's performance on a particular task; a task may have appeared to be difficult for a child when it, in fact, was not. The rate of success simply indicates how successfully a student performed in the task, rather than how successfully he is capable of performing.

Coding Procedures

During the refining of the coding sheet, decisions were made regarding which categories would be checked or omitted in relation to each of the areas of the Language Arts -- listening, speaking, viewing, writing, and oral or silent reading. The specifications made are discussed in the following section which describes the final observation categories in detail.

Observation Categories

The following descriptions of the categories included on the coding sheet were derived and refined during the pilot study.

1. Engagement

Human beings are constantly engaged in something. The purpose of this category was to determine whether or not a student was on-task or engaged in the appropriate activity at any given time.

D = Definitely engaged

This category was checked if there was clear evidence that the pupil was engaged in the assigned or appropriate task at the time of observation. If the child was actively speaking, writing, or reading orally, he was considered to be engaged in that activity. Engagement in listening, viewing, and silent reading were more difficult to assess because of their covert nature. The child was coded as engaged in these activities if he appeared to be directing his attention toward the appropriate activity visually, and was not engaged in some alternate activity.

DN = Definitely not engaged

This category was checked if there was a behavioral reason to indicate that the pupil was not engaged in the appropriate activity; that is, he was obviously engaged in some activity other than the one he was expected to be involved in. For example, if the student was expected to be involved in writing individually, off-task behaviors might include socializing, walking around the room, sharpening pencils, attending to distractions, reading an unrelated book, disturbing another pupil, etc.

CT = Can't tell

When there was no clear indication as to whether a pupil was or was not engaged in the appropriate activity, or when there was conflicting evidence about involvement, the CT category was checked. Such instances could occur in listening, viewing, writing, or silent reading activities if the child appeared to be staring blankly, but may in fact have been listening or reflecting relevantly.

2. Area of Language Arts

L = Listening

If the student was expected to be receiving information or communication chiefly through the auditory mode, the L category was checked. When the activity was judged to be a listening activity, only the first four categories were relevant and therefore marked: degree of engagement, area of language arts, instructional setting, and partner. A note was generally made under "Remarks" specifying the type of listening activity.

S = Speaking

Classroom situations often involved a combination of listening and speaking. In these situations, the child was coded according to whether he had the opportunity for speaking or listening at the particular moment of observation. During class discussions, for example, most children are listening while one person speaks at a time. As in listening, only the first four categories were coded for a speaking activity, and the nature of the activity was noted under "Remarks".

V = Viewing

This category was reserved for coding activities in which the student's major involvement was in watching the presentation of material through means such as films, filmstrips, television, or a live play. Only the first three categories were coded in a viewing activity, and again, the type of activity was specified under "Remarks".

W = Writing

An activity was considered to be a writing activity if the child was expected to be putting some symbolization of ideas onto a writing surface. His symbolization might include pictures, lines, letters , or words. When coding a writing activity, the "Transition/Wait" category was omitted, and the "Partner" category was marked only if the student was writing a personal message to the teacher or to another pupil.

R (o) = Oral reading

This category was checked if the child was expected to be reading audibly. All categories except "Transitional/ Wait" were coded in relation to oral reading activities.

R (s) = Silent reading

Frequently, silent reading activities also involved written responses. If the child was definitely not engaged in either silent reading or writing at the moment of observation, the activity was coded according to whether it dominantly provided for silent reading, or was chiefly a writing activity with little reading. If the child was engaged in the silent reading/writing activity, he was coded as being engaged in the one activity that was involving him at the moment of observation -- either silent reading or writing. All categories except "Partner" and "Transition/Wait" were coded in relation to silent reading.

3. Instructional Setting

WG = Whole group

This category was checked if the majority or all of the class was being instructed as a whole. Usually, the whole group was teacher-led, although it could also include instances where a child was presenting to the group, or where audio-visual materials were the source of instruction.

SG = Small group

The small group situation existed when less than half the class formed a group for instruction. Small groups could be directed similarly to large groups, but could also involve several students interacting together for the purposes of working through a project.

I = Individual

Individual involvement was coded when a pupil was working alone in writing, silent reading or viewing activities. Such activities have been commonly referred to as "seatwork" assignments, and are usually expected to be carried out independently with periodic supervision and guidance from the teacher. The individual setting also occurred in listening, speaking, and oral reading when a pupil was involved in these activities on a one-to-one basis with the teacher or another person.

4. Partner

This category was checked only in relation to listening, speaking, and oral reading activities, and in relation to writing only if the child was writing a personal communication to the teacher or to another child. In the case of speaking and oral reading in a group situation, both T and P could be checked as being involved in the interaction.

T = Teacher

P = Pupil or pupils

5. Source of Content

This category was marked only in relation to oral reading, silent reading, and writing activities.

WS = Worksheet

WB = Workbook

BR = Basal reader

LB = Library book

Any book other than the basal reader was coded in this category.

Ch = Chart

BB = Blackboard

O = Other

If the source of content did not fit in any of the specified categories, a check was placed under "Other", and it was identified under "Remarks".

6. Type of Unit

The type of unit was marked only if the activity was oral reading, silent reading, or writing.

P = Pictures

This category included drawing, coloring, circling, joining, or looking at pictures.

L = Letters

This category was checked if the child was involved with reading or writing individual letters or numbers.

IW = Isolated words

IS = Isolated sentences

This unit was considered as isolated sentences even when there were several sentences if they were not related to each other in conveying a continuous message.

CD = Connected discourse

Connected discourse included two or more sentences which conveyed a continuous message. Poems, paragraphs, and stories were examples of connected discourse.

7. Assigned or Chosen Task

Assigned G = Assigned, general

This category was checked if the child was given general directions, but had a large amount of choice in selecting his particular activity. An example of a generally assigned task would be when children are directed to find something to read from the classroom collection, and each child makes his own selection.

Assigned S = Assigned, specific

When children were directed by the teacher to carry out a particular activity, that activity was considered to be specifically assigned.

Ch = Chosen

This category was checked when a pupil was free to choose his own activity. It was also checked in conjunction with "Assigned, general" in instances where the child was allowed a degree of choice within certain limits.

8. Rate of Success

For reading or writing activities, the observer estimated the student's success in the particular task with which he was involved. If the task involved a written response, a question mark was placed in the appropriate space to indicate estimated success. Copies of these written responses were later made and examined in terms of the number of errors to verify or change the estimate of success.

H= High success

Behavioral indications of high success included such things as fluency in oral reading, proceeding with the task with little or no need for assistnace in silent reading or writing tasks, and producing written work with very few errors.

M = Medium success

If the student was able to complete most of the task correctly, but required some direction and assistance to do so, he was considered to be achieving medium success.

L = Low success

The child was considered to be achieving low success when he needed much assistance or was unable to complete a task, when many of his responses were inaccurate, or when there were behavioral signs of frustration with the task.

9. Other Activities

When either "Transition" or "Wait" was checked, no other categories were coded.

T = Transition

A pupil was coded as being in transition if he was actively preparing for an activity, or if he was actively changing from one activity to another.

W = Wait

The pupil was considered to be waiting when he had finished or could not continue an activity. This situation could occur, for example, when a child had assembled his materials for an activity, but had to wait for others in the class to get ready, or when a student was waiting for the teacher to help him or to check his work.

10. Remarks

Any relevant behavior or setting occurrence not accounted for in the coding categories, and which could assist in the translation of the coded data, was recorded in the form of brief explanatory notations under "Remarks".

Samples of completed coding sheets used during the study appear in the appendix, and a blank coding sheet appears in Figure 2.

Coding Sheet #__________ Date__________ Lesson__________ Time__________

Pupil	Time		Degree of Engagement			Area of L.A.						Instruct. Setting			Partner		Source of Content							Type of Unit					Assigned or Chosen			Rate of Success			Other Activ.		Remarks
	Min	Sec	D	DN	CT	L	S	V	W	R		WG	SG	I	T	P	WS	WB	BR	LB	Ch	BB	O	P	L	IW	IS	CD	Assign.		Ch	H	M	L	T	W	
										O	S																		G	S							
Brian	0	00																																			
	2																																				
	4																																				
	6																																				
	8																																				
Robert	0	30																																			
	2	30																																			
	4	30																																			
	6	30																																			
	8	30																																			
Jerry	1	00																																			
	3																																				
	5																																				
	7																																				
	9																																				
Shawn	1	30																																			
	3	30																																			
	5	30																																			
	7	30																																			
	9	30																																			

Degree of Engagement
D = Definitely engaged
DN = Definitely not engaged
CT = Can't tell

Area of Language Arts
L = Listening
S = Speaking
V = Viewing
W = Writing
R(O) = Oral Reading
R(S) = Silent Reading

Instructional Setting
WG = Whole group
SG = Small group
I = Individual

Partner
T = Teacher
P = Pupil

Source of Content
WS = Worksheet
WB = Workbook
BR = Basal reader
LB = Library book
Ch = Chart
BB = Blackboard
O = Other

Type of Unit
P = Picture
L = Letter
IW = Isolated words
IS = Isolated sentences
CD = Connected discourse

Assigned or Chosen
Assigned G = General
S = Specific
Ch = Chosen

Rate of Success
H = High
M = Medium
L = Low

Other Activities
T = Transition
W = Wait

Figure 2. Coding Sheet

Observation of Individual Pupil Behavior

The observations during the gathering of the data were made of the natural, on-going activities of the pupils in their classroom, and there were no apparent alterations of the normal schedule or organization of the classroom for the study. The teacher was told that observations were being made to determine how individual pupils made use of their learning time during Language Arts instruction, but she was not informed of the identity of the particular pupils selected for observation.

The researcher spent approximately 600 minutes within the classroom of study prior to the commencement of data gathering, and met for about four hours of discussions with the teacher. This time spent in the classroom served the double purpose of familiarizing the researcher with the classroom routine, and allowing the teacher and children to become comfortable with the presence of the observer. A second observer was trained and interobserver reliability was measured in two sessions, including a 70-minute period prior to the study and a 90-minute period on the second day of the data collection.

The most frequent location of the researcher and second observer are identified on the diagram of the classroom in Figure 1. However, it was necessary to move about the room on occasion to accommodate observations of the target pupils during various groupings and arrangements of the students for particular activities.

Since the children were accustomed to other classroom visitors and observers as well as the present researchers, and since they had not attempted to impress or communicate with the observer, it was decided, in consultation with the teacher, not to draw attention to the presence of the observers by any introduction. The parents of each child in the class had been informed by letter about the purpose and nature of the study, and had returned the signed copy giving their approval to observations of their child.

Time Sampling Procedure

A time sampling procedure based on a two-minute cycle was used in coding observations. As stated by Drew (1980),

> time sampling is useful when the observer cannot watch the subject continuously and, instead, samples the observations by looking at the subject on a systematic basis (eg., at the end of a time interval). Sampling may permit observations on a group of subjects simultaneously. If the target behavior is evident at the time the observer samples, it is recorded as an occurrence (p.132).

Since four pupils were being observed in this study, the two-minute intervals were subdivided into thirty-second intervals and subjects were observed in a predetermined rotational sequence. The first subject and setting factors were observed at the beginning of the first thirty-second interval; the information from this mental picture was then transcribed onto the coding sheet. The second subject was observed at the beginning of the second thirty-second interval, and observations were again coded. Observations of subjects three and four were carried out in like manner, and then the cycle repeated itself. As a result, each pupil's behavior was sampled and recorded regularly every two minutes. Generally, the thirty-second interval was found to be sufficient to allow for observation and recording of data, often including a short clarifying remark. However, as Martin (1979) points out, classroom interaction rates are not constant across time, and observer-coders are "periodically inundated with peak periods of activity which are extremely difficult to record" (p.12). These peak periods tended to occur at times when new activities were initiated.

In evaluating time sampling measures of behavior, Powell, Martindale, and Kulp (1975) found that the shorter the time interval or observation cycle, the closer the observations approximated those obtainable through using a continuous recording system. They found that when an observation cycle of two minutes or less was used, observations closely resembled those obtainable through continuous observation. In calculating the percentage of sampling error in comparison with continuous observation, Powell et al. (1975) found an eight percent error using a two-minute cycle. An average of 15 percent error was found, with a range of five to 34 percent, when using a four-minute cycle. An interval of six minutes resulted in an average error of 12 percent, ranging between one and 27, and when a 10-minute interval was used, discrepancy was as large as 74 percent. In the present study it was proposed to use a three-minute observation cycle as used by Smyth (1979) in a study which documented the behaviors of four sixth-grade students in reading and mathematics activities. Since the coding system that was used for this study was less complex, and considered only Language Arts activities, the feasibility of shortening the observation interval to reduce sampling error was established during the pilot study.

In time sampling as used in this study, it was the observation made at the beginning of the 30-second time segment that was recorded on the coding sheet. In time sampling of this sort, an assumption is made that the moment of observation recorded is representative of the occurrence during the total interval between observations. Therefore, in subsequent analysis of the data, the sampled moment was generalized to the two-minute interval until that particular pupil was again observed. Error resulting from the generalizations was kept to a minimum by the reduction of the length of the interval to two minutes, and by sampling a large number of moments which were then averaged together.

Density and Duration of Observations

Density and duration of observations appear to vary a great deal among studies. Smyth (1979) found that the classroom observational period used by various other researchers, including those involved in the BTES studies, ranged from one day to seven days, either consecutively or distributed over up to six weeks. In other research Forness and Guthrie (1977) addressed the question of stability of pupil behavior in short-term classroom observation. After observing and recording pupil behavior for 15 days, they concluded that observations over four consecutive days generate data as stable as that collected over 15 days. Harnischfeger and Wiley (1975) suggest "dense observation over a relatively short period of time" (p.23).

For this study, a decision was made to collect data from observations in the classroom during Language Arts time for five consecutive days. The observations were done during one complete week, thus giving a sample from each day, Monday through Friday. In addition, observations were collected from one 15-minute period allotted to USSR resulting in a total of 600 minutes of observation for each of the four subjects. Observations were postponed until the first week of May as a result of earlier school-wide disruptions of routine. That week was considered by the teacher to be representative of usual activities in that classroom.

Observer Training and Reliability

During the seven weeks preceding the data collection for the major study, the researcher defined, learned, and practiced the use of the observational system. The actual classroom practice involved more than 17 hours of observation in five different grade one classrooms.

According to McGaw, Wardrop, and Bunda (1972), lack of reliability in observational research can arise when two measures of the same situation differ too much, either because the behaviors being observed are extremely variable, or because independent observers cannot agree on what they observe to be taking place. The most common method of determining the extent of the latter is to establish interobserver agreement (Weick, 1968; Drew, 1980); this is typically calculated by comparing the observational records of two or more observers who have coded the same classroom events during the same time (Frick & Semmel, 1978).

A single second observer was trained to establish interobserver reliability in the current study. This decision was based on the conclusion from an experimental study by Medley and Mitzel (1963) that nothing was added to reliability by introducing more than two observers in a classroom simultaneously.

The second observer was a former educator, with considerable experience in administration and in teaching first grade, and whose most recent and present involvement is in coordinating research projects. The training took place during March and April, 1983, and involved 330 minutes of practice in the classroom as well as several hours of meetings to discuss, evaluate, and clarify procedures used during observation.

The degree to which two independent observers show agreement over a number of occasions in coding the behavior of a subject is considered an acceptable measure of reliability (Kazden, 1977). Frick and Semmel (1978) point out the necessity for relatively high interobserver agreement prior to the actual data-gathering, to demonstrate adequate training of the observers involved. Agreement exceeding 80 percent has been considered satisfactory in classroom observation of this type (Kazdin, 1977). Prior to the commencement of data collection for the actual study, the researcher and the second observer independently coded a 70-minute period of observation in the classroom selected for the study. Interobserver agreement was calculated using the Arrington Reliability Formula (Fieffel & Lorge, 1950):

$$\frac{2 \text{ X Total of Agreements}}{(2 \text{ X Total of Agreements}) + \text{Disagreements}}$$

The data obtained in the calculation of interobserver reliability prior to the study are presented in Table 1.

A second measure of reliability was calculated during the actual data collection for the study. The second observer was able to be in the classroom on the second day of the week of observations, and the figures appearing in Table 2 were secured from the 90-minute observation that occurred on that day.

A summary of the interobserver reliability obtained in the measures prior to and during the study are presented in Table 3. Overall reliability of 0.95 prior to the study and 0.96 during the study was obtained. The figures in Table 3 show that in both the measures prior to and during the study, in none of the categories did the coefficient of reliability deviate markedly from the others, and all categories yielded reliability of 0.90 or higher. Although reliability was slightly higher in the second measure in the categories of degree of engagement, partner, and rate of success, variations between the two measures were minimal, ranging from .00 to .06.

Considering the complexity of classroom observation, the results were considered highly satisfactory. Undoubtedly,

Table 1

Interobserver Agreement Prior to the Study

Language Arts Period: 70 minute observation

Coding Category	Number of Decisions	Number of Agreements	Number of Disagreements	Coefficient of Reliability
Degree of Engagement	140	115	25	0.90
Area of Language Arts	140	132	8	0.97
Instructional Setting	140	130	10	0.96
Partner	140	117	23	0.91
Source of Content	140	135	5	0.98
Type of Unit	140	127	13	0.95
Assigned or Chosen	140	136	4	0.98
Rate of Success	140	114	26	0.90
Other Activities (Transition or Wait)	140	134	6	0.98
Total	1260	1140	120	0.95

Table 2

Interobserver Agreement During the Study

Language Arts Period: 90 minute observation

Coding Category	Number of Decisions	Number of Agreements	Number of Disagreements	Coefficient of Reliability
Degree of Engagement	180	161	19	0.94
Area of Language Arts	180	166	14	0.96
Instructional Setting	180	174	6	0.98
Partner	180	169	11	0.97
Source of Content	180	165	15	0.96
Type of Unit	180	169	11	0.97
Assigned or Chosen	180	166	14	0.96
Rate of Success	180	165	15	0.96
Other Activities (Transition or Wait)	180	172	8	0.98
Total	1620	1507	113	0.96

Table 3

Comparison of Interobserver Agreement
Prior to and During the Study

Coding Category	Coefficient of Reliability	
	Prior to Study (70-min. observation)	During Study (90-min. observation)
Degree of Engagement	0.90	0.94
Area of Language Arts	0.97	0.96
Instructional Setting	0.96	0.98
Partner	0.91	0.97
Source of Content	0.98	0.96
Type of Unit	0.95	0.97
Assigned or Chosen	0.98	0.96
Rate of Success	0.90	0.96
Other Activities (Transition or Wait)	0.98	0.98
Total	0.95	0.96

factors which contributed to the achievement of high levels of agreement included the experience of the second observer in education and research, her facility in learning the observation system, and her willingness to spend time during training in the classroom. In addition, the specification of the moment of observation as the beginning of the 30-second time block designated for the observation and recording of each target pupil's behavior proved to be most facilitative to agreement in coding.

Summary

The design of the study was essentially descriptive and the focus was on the ways in which four individual pupils near the end of their grade one term made use of time during the scheduled time for Language Arts instruction in their classroom. Opportunity was provided in the pilot study for revising and learning to use the proposed observational coding system and time sampling procedures, as well as acclimatizing the researcher and classroom to one another. The coding system was refined, and the definition was given to the observational categories and their implementation during observational data-gathering. The time sampling interval was reduced to a two-minute cycle, and each of the four pupils was observed at the beginning of a specific 30-second segment. The behavior thus observed and coded was generalized to describe the two-minute interval until the next observation of that pupil. The observations took place during the scheduled Language Arts time each day during the first week of May, 1983, and yielded 600 minutes of observation for each of the target pupils. A second observer was trained, and interobserver reliability was calculated using data collected from two sessions, one prior to and one during the study. Both measures yielded a high coefficient of reliability, and no marked deviation appeared among the categories or across the two measures.

CHAPTER 4

ANALYSIS AND DISCUSSION OF THE DATA

The data were analyzed in terms of the research questions which were structured around allocated time, engaged time, and success rate. The findings are discussed with reference to these three aspects of Academic Learning Time.

Allocated Time

Question One: Time Allocated to Each Area of Language Arts

How much classroom time is allocated to each of the categories of the Language Arts (reading, listening, speaking, viewing, and writing) for each pupil?

A decision was made to differentiate between allocated time and scheduled time. Scheduled time was described as the amount of time officially timetabled or designated by the teacher for instruction in a particular subject area. In this case, the scheduled time for Language Arts was 600 minutes during the week of observation. This scheduled time was made up of 135 minutes on each of Monday, Wednesday, and Friday, 90 minutes on Tuesday, and 105 minutes on Thursday (including 15 minutes of USSR). The 135-minute time blocks three times a week were scheduled from 9:00 A.M. until the recess break at 10:30 A.M. On Tuesday and Thursday, the 90 minute block from 9:00 A.M. until 10:30 A.M. was scheduled for Language Arts, and the observed 15-minute period of USSR occurred on Thursday between 11:15 A.M., when the children returned from music instruction with another teacher, and their lunch break at 11:30 A.M. The time scheduled for Language Arts instruction was constant for each of the four pupils observed.

Allocated time was described as the actual time that was available to an individual child in a particular subject area. As can be seen in the summary of data in Table 4, transition and wait time and time allocated to activities other than Language Arts accounted for more than one third of the time scheduled for Language Arts. A variation of 36 minutes over the week was seen between the highest and lowest amount of time available to the four pupils for Language Arts activities. Jerry and Robert, the two children identified as average achievers, experienced the highest amount of allocated time, while Shawn, identified as a low achiever, received the least allocated Language Arts time. Brian, the high achiever, completed his work quickly and often spent time waiting for others, and the amount of time he had available for Language Arts activities was less than that of the average achievers, but more than that of the low achiever. In Table 4, allocated Language Arts time is expressed as a percentage of the scheduled time for Language Arts during the week of observation. The variation between the highest and lowest total percentages was only six percentage points. Generally, time actually available to the pupils for Language Arts activities constituted approximately two-thirds of the observed scheduled Language Arts time, and represented 350 to 386 minutes during the week for

Table 4

Time Allocated to Each Category Compared to Time Allocated to the Total Language Arts and to Scheduled Time for the Total Language Arts (600 minutes)

Category	High Achiever			Average Achievers						Low Achiever		
	Brian			Robert			Jerry			Shawn		
	All. Mins.	% of All. L.A. Time	% of Sch. L.A. Time	All. Mins.	% of All. L.A. Time	% of Sch. L.A. Time	All. Mins.	% of All. L.A. Time	% of Sch. L.A. Time	All. Mins.	% of All. L.A. Time	% of Sch. L.A. Time
Listening	164	44.6	27.3	170	45.2	28.3	170	44.0	28.3	140	40.0	23.3
Speaking	6	1.6	1.0	10	2.7	1.7	6	1.6	1.0	6	1.7	1.0
Viewing	4	1.1	0.7	4	1.1	0.7	4	1.0	0.7	4	1.2	0.7
Writing	124	33.7	20.7	136	36.1	22.7	166	43.0	27.7	168	48.0	28.0
Reading	70	19.0	11.7	56	14.9	9.3	40	10.4	6.7	32	9.1	5.3
Total time allocated to Language Arts	368		61.4	376		62.7	386		64.4	350		58.3
Transition	102		17.0	104		17.3	92		15.3	118		19.7
Wait	82		13.6	66		11.0	64		10.6	74		12.3
*Other	48		8.0	54		9.0	58		9.7	58		9.6
Total time in activities other than Language Arts	232		38,6	224		37.3	214		35.6	250		41.6

*included word game, free time, making Mother's Day baskets.

each pupil.

Table 4 also contains a summary of the number of minutes each target pupil had available for activities in the various areas of the Language Arts. Minimal amounts of time were available to any of the target pupils during the observed Language Arts time for speaking or viewing. Generally, most time was available for listening, followed by writing (except for Shawn, who had more time in writing than in listening). Reading was third in terms of allocated Language Arts time, but occupied only from one-fifth to one-half of the amount of time allocated to writing, and made up from nine to 19 percent of the total allocated Language Arts time.

Each of the pupils observed had from 40 to 45 percent of the total allocated Language Arts time available for listening activities. In writing activities, the high-achieving pupil had the lowest allocated time, whereas the low-achieving pupil had the highest. Part of the explanation lies in the fact that Brian completed his written assignments quickly and was then able to go on to other things. Shawn, on the other hand, as well as spending part of the skills instruction time in independent writing activities, took a great deal of time to perform written tasks, and generally produced small amounts of written material. The average achievers differed in that Jerry required more time for writing, chiefly because he appeared to enjoy creative writing, and produced greater quantities than Robert, who generally produced short written products.

A range of from 32 minutes to 70 minutes were available for reading, with Shawn having least and Brian having most allocated time. This aspect will be discussed in more detail in the section dealing with time in reading.

In Table 4, the time allocated to each area of the Language Arts is expressed both as a percentage of the total allocated and total scheduled Language Arts time, and a considerable difference can be seen between the two. For example, while the four target pupils had 40 to 45 percent of allocated Language Arts time for listening activities, this represented only about 25 percent of the total time scheduled for Language Arts. Similarly, 33 to 48 percent of the allocated Language Arts time was available for writing, and nine to 19 percent was available for reading. When compared to the time scheduled for Language Arts, about 25 percent was available for writing and about five to 12 percent was available for reading. Brian had the largest amount of time available for reading, with a total of approximately one hour during the entire week. Shawn had the smallest amount, with a total of about one-half an hour available for reading.

An example of how time was allocated is given in the following description of Brian's allocated time on the observed Monday morning from 9:00 A.M. until 11:30 A.M. The children arrived at 8:50, but the first 10 minutes were not considered to be scheduled Language Arts time, as housekeeping tasks of the classroom were discharged at this time. For the first four minutes after 9:00 A.M., Brian waited while job monitors were changed and a pupil new to the classroom was reprimanded. Brian spent the next four minutes attentively listening to the teacher, who was giving instruction relative to a sequence exercise. The next two minutes were spent in transition, getting poem booklets ready for the following two minutes, during which the girls were asked to read orally from their booklets. The boys also had a brief turn at oral reading, and then Brian spent two minutes in transition, putting his poem booklet away and getting out his spelling exercise book. He then spent two minutes waiting for the other children to get ready for instruction. The next two minutes were spent in copying "Arbor Day" from the blackboard, followed by two minutes during which Brian listened to another pupil asking the teacher a question. Two minutes were spent in transition, during which Brian sharpened his pencil, and he spent two minutes waiting for others in the class to finish writing their spelling word so that instruction could continue. The next eight minutes involved listening to the teacher as she gave instruction relative to the theme of Arbor Day, utilizing the spelling words "stem", "trunk", and "bark". Two more minutes were again spent in waiting for other pupils to finish their spelling words, and then the following four minutes involved listening to the teacher as she introduced and read the story of "Toy Tiger" from the basal reader to the class. Two minutes of transition time were taken up as the teacher then handed out a worksheet relating to the story. The worksheet was done cooperatively with teacher guidance, and Brian was observed to be writing for four minutes, listening to other individuals orally reading questions for six minutes, and then silently reading the last questions on the page for two minutes. The teacher then initiated an activity involving consonant blends. Brian waited for his sheet of paper for two minutes, and then had the next 14 minutes available for writing the blend sound heard at the beginning of teacher-dictated words. At 10:08 A.M., the children were asked to assemble on the floor, and Brian again waited for two minutes while slower pupils gathered for instructions relating to pen-pal letters, then spent four minutes waiting to be given his paper and taking it to his desk. Six minutes were available for recopying the letter before a group of older children came in to present a four-minute puppet play. The puppet play was interrupted by a two-minute announcement over the intercom by the principal.

After the 15-minute recess, Brian took four minutes to get settled, after which he had 10 more minutes to recopy his letter, and he waited for two minutes for the teacher to check his work. He was one of the first to finish, and spent the next 12 minutes working individually in his workbook. Four minutes were spent in transition as the class assembled for sharing time, and Brian waited for two minutes while the teacher answered a knock at the door and received a message. During the 12 minutes of sharing, Brian had opportunity to speak for two minutes, and to listen to other pupils and to the teacher for 10 minutes. The children were then dismissed for their lunch break.

Question Two: Time Allocated to Various Reading Activities

How much time is allocated to the various kinds of activities within the reading category for each pupil?

Allocated time for reading activities was analyzed in terms of the categories on the coding sheets that identified oral and silent reading, source of content, type of unit, and setting (see Table 5).

Oral and silent reading. Only four to six minutes were available to the target pupils for oral reading activities. For all the pupils, this opportunity consisted of orally reading sentences or short paragraphs from the blackboard during the skills instruction period, or orally reading a duplicated predictable chant (Over in the Meadow).

Brian, the high achiever, had most opportunity for silent reading, and Shawn, the low achiever, had least. Brian's 64 minutes available for silent reading represented approximately 17 percent of his allocated Language Arts time and 11 percent of the scheduled Language Arts time. Shawn had 28 minutes available for silent reading, representing eight percent of his allocated Language Arts time and about five percent of the scheduled time. The average achievers' time available for silent reading was between Brian's and Shawn's. Robert had 52 minutes allocated to silent reading, which represented approximately 14 percent of the allocated

Table 5

Minutes Allocated to Various Reading Activities for Each Pupil

Reading Activity	Brian		Robert		Jerry		Shawn	
	Mins. All.	% of Rdg. Time	Mins. All.	% of Rdg. Time	Mins. All.	% of Rdg. Time	Mins. All.	% of Rdg. Time
Total Reading Time								
Oral Reading	6	9	4	7	6	15	4	13
Silent Reading	64	91	52	93	34	85	28	87
Source of Content								
Worksheets	16	23	12	21	4	10	10	31
Workbook	26	37	12	21	10	25	0	0
Basal Reader	0	0	0	0	0	0	8	25
Library Book	6	9	8	14	6	15	6	19
Chart	0	0	0	0	0	0	0	0
Blackboard	20	28	20	36	16	40	6	19
Other	2	3	4	7	4	10	2	6
Type of Unit								
Pictures	0	0	0	0	0	0	2	6
Letters	4	6	2	4	2	5	0	0
Isolated Words	12	17	8	14	10	25	8	25
Isolated Sentences	32	46	10	18	6	15	4	13
Connected Discourse	22	31	36	64	22	55	18	56
Setting								
Whole Group	16	23	16	28	16	40	6	19
Small Group	0	0	2	4	2	5	10	31
Individual	54	77	38	68	22	55	16	50

Language Arts time and nine percent of the scheduled time. Jerry had 34 minutes available for silent reading, constituting about nine percent of the time allocated to, and six percent of the time scheduled for Language Arts.

Setting. When the data were analyzed in terms of setting, each of the four pupils had from 50 to 77 percent of their reading time available for individual work. This was not surprising, since most of their reading time involved silent rather than oral reading, and silent reading is essentially an individual activity. With the exception of the low achiever, the pupils had very little of their reading time, from zero to five percent, available in a small group setting. While Shawn spent some time in a small group setting, several other activities as well as reading took place, and he actually had 10 minutes of this time available for reading. This represented 31 percent of his total available reading time. Three of the pupils each had 16 minutes available for reading in a whole group situation, usually during the skills instruction period of the morning. Since Shawn was often not part of this instructional group, he had only six minutes available for reading in a whole group setting.

Source of content. The basal reader was not used as reading material by the pupils during the week of observed Language Arts periods, with the exception of Shawn, who had opportunity for eight minutes of reading from that source during small group instruction. The children did, however, have opportunity to listen to a story read by the teacher from the basal reader once during the week. The majority of the available reading time involved reading material either on the blackboard, in a workbook, or on worksheets. Brian had 26 minutes available for reading while working in a workbook, while Robert and Jerry had 12 and 10 minutes respectively. Shawn did not have a workbook as such, but had a booklet of worksheets that were considered to be more appropriate for his reading level, and these were coded as worksheets. Brian and Robert each had 20 minutes available for reading from the blackboard, while Jerry had 16 minutes and Shawn had six minutes. Fewer minutes for Shawn may be reflective of the fact that reading from the blackboard was usually done during skills instruction, in which Shawn was often not included. Worksheets usually involved both reading and writing activities, and the portion of time reflected as reading time is that during which the individual pupil was observed to be reading on a worksheet plus the amount of time the pupil had for working on worksheets that involved predominantly reading rather than writing activity. Brian had 16 minutes, or about one-fourth of his reading time, available for reading on worksheets. Shawn had ten minutes, representing 31 percent of his reading time, available through worksheets, while Robert had 12 minutes and Jerry had four minutes for reading on worksheets. Both worksheets and workbooks were often done when individual pupils had finished other assignments, such as writing a letter, and the differences among the pupils in their allocated time is reflective of the fact that those pupils who completed assignments quickly had more time available for workbook and worksheet activities. During the observed USSR period, each of the four pupils had six to eight minutes available for reading from what was coded as library books. These were teacher-made booklets which usually contained transcribed stories (like Brown Bear and What is Big?), but some contained sentences utilizing sight words learned during the year.

Each of the four pupils had two to four minutes available for reading from other sources, and these included materials such as word cards for a game board, a mimeographed poem, and a sentence on a strip of manilla tag held up by another child.

Although numerous charts were displayed around the classroom, and had been observed to be utilized in reading during the pilot study, none of the target pupils read from the charts during the week of data collection.

Type of unit. Analyzing the type of unit was useful in determining the kinds of reading for which individual pupils had opportunity. During the observed periods, each of the pupils had very small amounts of time allotted to interpreting pictures or isolated letters in a receptive reading activity, but these were more evident in the productive writing activities. The target pupils generally had most of their reading time allocated to connected discourse. Brian, however, had most time available for reading isolated sentences. This seemed to be reflective of the type of exercises contained in the workbook and on worksheets for which Brian had more time than did the other three pupils.

Summary. This analysis yields a profile of each pupil's allocated reading time. Brian emerged as the student who had the largest amount of available reading time during the observed week of Language Arts periods. Of the 70 minutes, 64 were available for silent reading and six were available for oral reading. About one-quarter of his reading time was spent in a whole group setting while the remainder involved individual work. About one-third of Brian's reading time involved material presented in the workbook, about one-quarter was presented on the blackboard and a quarter on worksheets, and about 8 percent was allocated to library books. Almost half of Brian's reading time involved isolated sentences, but 22 minutes were available for reading connected discourse, and 12 minutes for isolated words.

Robert had 56 minutes available for reading, 52 of which were available for silent reading. Twenty-two minutes, or about one-third of his time for reading, involved material presented on the blackboard, while 12 minutes were available for reading from each of worksheets or a workbook, and eight minutes were allotted to reading library books during USSR. Robert had 36 minutes available for reading connected discourse, 10 minutes for isolated sentences, eight for isolated words, and two for isolated letters. He spent more than two-thirds of his reading time individually, more than a quarter in a whole group setting and two minutes were available for Robert to read in a small group.

Jerry had 40 minutes available for reading, 34 of which were in silent reading. Most of his reading material was presented by means of the blackboard and the workbook, with smaller amounts available through the USSR books and worksheets. Over half of Jerry's reading opportunities involved connected discourse, about one-fourth involved isolated words, and about one-sixth involved isolated sentences. Slightly more than half of Jerry's reading opportunities were individual, about 40 percent were in a large group, and he had opportunity to read in a small group setting for two minutes.

Of the four target pupils, Shawn had the lowest number of minutes available for reading. Of his 32 minutes, 22 were available for silent reading. He had opportunity to read individually for 16 minutes, in a small group for 10 minutes, and in a large group for six minutes. The largest portion, 10 minutes, of his reading time was available for reading from worksheets, while eight minutes were available for reading from the basal reader, and six from each the USSR books and the blackboard. Shawn had 18 minutes available for reading connected discourse, eight for isolated words, four for isolated sentences, and two for interpreting pictures.

Discussion of Findings Related to Allocated Time

Although studies of allocated time have not always been consistent in their conclusions, researchers utilizing varying definitions and methodologies have generally indicated a crude but significant relationship between allocated time and achievement (Borg, 1980). While some of the earlier researchers did not distinguish between allocated time and scheduled time, such a differentiation was made in this study. Allocated time was defined as in the BTES study, as the time a pupil actually has available to work on particular academic content (BTES Newsletter, October, 1978). Rosenshine (1981) reported the findings of the BTES research relating to allocated time in the second and fifth grade classrooms studied. It was found that on the average, second grade pupils had about 90 minutes and fifth grade pupils had about 110 minutes available throughout the day for reading and Language Arts activities. For a week of five instructional days, this represents 450 and 550 minutes.

In the present study of first grade, it was found that the 600 minutes scheduled during the week for Language Arts, was consistent with the average number of minutes that were scheduled for Language Arts in grade one classrooms throughout the school district, as reported in the guidelines for instructional time. Of the 600 scheduled minutes, the four pupils observed actually had 350 to 386 minutes available for Language Arts activities, representing approximately 80 minutes less per week than the average reported by Rosenshine (1981) for grade two pupils. While Rosenshine (1981) used the terms "reading", "writing", and "language arts" rather loosely and often interchangeably, the various aspects of the Language Arts were differentiated in the present study. It was found that about one-fourth of the scheduled Language Arts time was available for each of listening and writing activities, while reading activities were allocated from six to 12 percent, and speaking and viewing were each allocated one to two percent of the total scheduled Language Arts time.

The BTES researchers found that about 20 percent of daily class time was spent in noninstructional activities, including transitions, waiting, and class business (Rosenshine, 1981). A separate category, nonacademic activities, involved time spent in music, art, storytime, and sharing. In the present study, storytime and sharing were considered as listening and speaking activities of the Language Arts, while time spent in transition, waiting, or activities other than Language Arts was considered as noninstructional Language Arts time. Such noninstructional time constituted about 40 percent of the scheduled Language Arts time for the pupils observed in this study.

One of the conclusions of the BTES researchers was that the amount of time allocated to instruction in a particular content area is positively associated with student learning in that content area (Fisher, Berliner, et al., 1980). They described the allocated time as setting the upper limit on the amount of Academic Learning Time that a student can accumulate (BTES Newsletter, October, 1978). In other words, a pupil cannot engage in an activity with a high rate of success if that pupil does not first of all have the opportunity for that activity. The 40 percent of the scheduled Language Arts time that was spent in transition, waiting, and other activities was thereby unavailable to the pupils for the accumulation of ALT in the Language Arts. Of the remaining scheduled time, the pupils generally had the greatest possibility for accumulating ALT in listening and writing activities, with minimal opportunity in speaking and viewing. The four pupils had 32, 40, 56, and 70 minutes available for reading activities during the week, representing an upper limit of possible ALT in reading of from six to 12 percent of the total scheduled Language Arts time.

Considering the findings of Leinhardt, Zigmond, and Cooley (Lehr, 1982; Zigmond, Vallecorsa, & Leinhardt, 1980) that increased time in discussion, oral activities, and written activities did not result in achievement gains in reading, while an increase of four minutes of silent reading per day could result in a one-month gain at the end of a school year, it appears to be important that students be given the opportunity to read proportionate to the priority given to increasing reading achievement. While recognition must be given to the complementary value of writing as an expressive component to the receptive act of reading in the Language Arts, perhaps there is a danger that a heavy emphasis on writing can result in diminishing the time necessary for reading if students are to become proficient readers.

Good and Beckerman (1978) noted that low-achieving pupils tend to fall further and further behind each year, and that part of the explanation lies in the fact that they spend less time than other pupils on academic tasks. In this study, the circularity of this phenomenon may be compounded by the fact that the low achiever had approximately half as much time allocated to reading activities as the high achiever. This provision of opportunity to read could indeed be the baseline from which to observe the "rich getting richer and the poor getting poorer" in their relative reading competence.

Engaged Time

Questions One and Two: Engaged Time in Reading Activities

1. How much of the time allocated for various kinds of reading activities is utilized by each pupil through engagement in that activity?

2. Are there marked differences in levels of engagement in reading activities among the high, average, and low achievers?

In Figure 3, variation among the pupils in both allocated time and engagement rates in reading activities is illustrated. The high-achieving pupil had the largest amount of time allocated to reading, accumulated the most engaged minutes in reading, and had the highest rate of engagement (83 percent) in reading. Shawn, the low-achieving pupil, had the smallest amount of time allocated to reading and accumulated the fewest minutes of engagement in reading. However, Robert, one of the average achievers, had the lowest engagement rate in reading, since he appeared to be attentive for only 43 percent of the 56 minutes he had available for reading. Jerry had only 40 minutes available for reading, but was attentive 75 percent of that time, and therefore accumulated more engaged reading time than Robert.

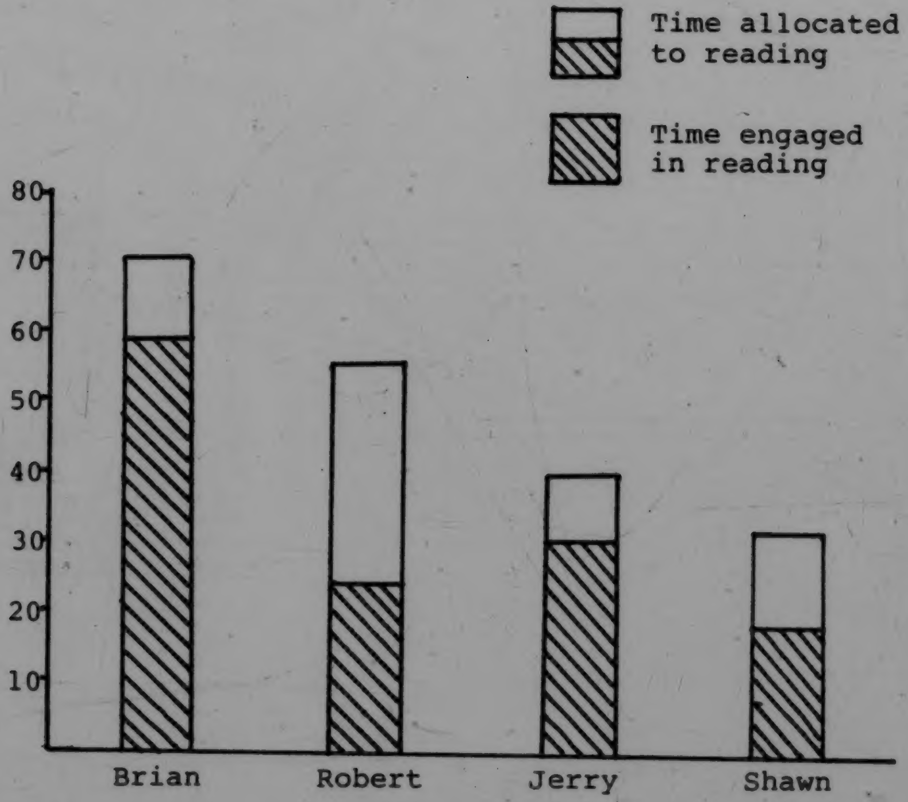


Figure 3. Engagement rate during time allocated to reading for each pupil.

Differences can also be seen among the four pupils in terms of their engagement in particular kinds of reading activities (see Table 6). Brian appeared to be able to attend to reading that involved various types of units and sources of content. He was highly engaged in reading activities presented in a whole group setting, those involving the use of the blackboard, USSR books, and the workbook, and those involving letters, isolated words, and connected discourse. He appeared to be involved about two-thirds of the time when reading isolated sentences or when reading from worksheets, and about three-fourths of the time when reading in an individual setting. Shawn, identified as a low achiever, accumulated 18 engaged reading minutes out of a possible 32. This represents about one-third as much total engaged time in reading as accumulated by Brian. Shawn was engaged about 75 percent of the time when reading individually, and less than half the time when reading in a small or large group. Shawn appeared to be very attentive during the six minutes that he had opportunity to read the USSR booklets, and during the two minutes available for reading in the word game, and he was engaged for six of the ten minutes available for reading on worksheets. He was attentive less than one-third of the time when material was presented for reading on the blackboard or in the basal reader. The 10 minutes Shawn had available for reading from the basal reader was during small group instruction, and it was observed that the teacher was frequently interrupted by pupils from the large group who had been assigned individual

Table 6

Engaged Time in Various Reading Activities for Each Pupil During the Scheduled Language Arts Time

Reading Activity	Brian		Robert		Jerry		Shawn	
	Engd. Mins.	Engmnt. Rate	Engd. Mins.	Engmnt. Rate	Engd. Mins.	Engmnt. Rate	Engd. Mins.	Engmnt. Rate
Total Reading Time	58	83	24	43	30	75	18	56
Oral Reading	6	100	2	50	4	67	2	10
Silent Reading	52	81	22	42	26	76	16	57
Source of Content								
Worksheets	10	63	12	100	4	100	6	60
Workbook	22	85	6	50	6	60		
Basal Reader							2	25
Library Book	6	100	2	25	6	100	6	100
Chart								
Blackboard	20	100	12	60	12	75	2	33
Other	2	100	2	50	2	50	2	100
Type of Unit								
Pictures							2	100
Letters	4	100			2	100		
Isolated Words	12	100	4	50	6	60	8	100
Isolated Sentences	20	63	2	20	6	100		
Connected Discourse	22	100	18	50	16	73	8	44
Setting								
Whole Group	16	100	6	38	12	75	2	33
Small Group					2	100	4	40
Individual	42	78	18	47	16	73	12	75

seatwork. Shawn spent much of this time attending to the interruptions rather than following the teacher's instruction to find and read to himself his favorite story in the reader. In analyzing the type of unit being read, Shawn appeared to be highly attentive when interpreting pictures or isolated words, considerably less attentive when reading connected discourse, and was not engaged at all during the four minutes he had available for reading isolated sentences.

Jerry was attentive to reading activities about 75 percent of the time regardless of the type of setting. He was most attentive when reading the USSR booklets and worksheets, and when the unit was letters or isolated sentences. Medium levels of engagement were in evidence when Jerry read from the blackboard or workbook, and when the unit was connected discourse or isolated words.

Of the 56 minutes Robert had available for reading, he was engaged for only 24 minutes, or 43 percent of the time. He appeared to be most attentive when reading from worksheets. Neither whole group, small group, nor individual settings seemed to be particularly advantageous to Robert in terms of engagement in reading activities. He was least attentive during opportunities to read isolated sentences, and during the eight minutes he had available for reading library books during the observed USSR period. Robert was engaged for about half of the time he had available for reading isolated words or connected discourse, and when the material was presented on the blackboard, in the workbook, or through other means, including reading a mimeographed poem and selecting a card showing a consonant blend.

In searching for an example to illustrate Robert's relatively poor engagement in reading, few instances of sustained opportunity to read could be found, as much of his available reading time was made up of small segments. One of the longer periods took place after recess on Wednesday, when Robert was assigned to work individually in his own place in his workbook while the teacher was involved with another small group of students. During the 25 minutes between coming in from recess and putting his workbook away, Robert actually engaged in six minutes of reading and two minutes of writing. He took the first four minutes to come in, get settled, and get his workbook onto his desk. Then he spent two minutes watching the other pupils around him. When he did begin to work on page one of his workbook, which involved reading and following directions given in two- or three-sentence segments, he was actively involved in reading for two minutes, colored for four minutes, and read again for four minutes. He turned to page two, but spent the next eight minutes talking to friends nearby. That brought him to the last two minutes, which he spent in putting his workbook away. On Thursday, Robert spent the four minutes that were available for reading in a phonics booklet by talking to another child about his birthday, discussing Jerry's toy tanks, and looking about the room. Similarly, during the scheduled 15 minutes for USSR on Thursday, Robert spent five minutes coming in and getting settled with a book. He read "What is Big?" for two minutes, then, with all of his three books closed, he looked about the room, sometimes appearing to stare blankly, for the next six minutes. During the last four minutes he put his books away and prepared for dismissal for lunch.

A comparison of the four pupils indicates a variation in the degree to which different types of reading activities held the engagement of each pupil. In terms of the source of content, Brian, Jerry, and Shawn were highly engaged during the six minutes available for reading USSR booklets, while Robert exhibited low engagement in this activity. Brian also was highly engaged when reading from the blackboard, and had an engagement rate of 85 percent when reading from the workbook. Robert and Jerry were highly engaged when reading from worksheets. Lowest rates of engagement were shown by Robert when reading the USSR booklets, and Shawn when reading from the basal reader or the blackboard.

In considering the type of unit involved in the reading, it was found that Brian had high engagement in reading connected discourse, and isolated words and letters. Jerry was highly engaged when reading isolated sentences and letters, and Shawn was highly engaged when reading isolated words and when interpreting pictures. Poorest rates of engagement occurred for Shawn when reading connected discourse, and for Robert, when reading isolated sentences, isolated words, and connected discourse.

In terms of the setting, no pupil except Shawn had much opportunity to read in a small group, and he exhibited low engagement during that time. He also had a low rate of engagement when reading in a large group, but was engaged 75 percent of the time when reading individually. Jerry engaged equally well in whole group and individual reading (about 75 percent), while Robert had relatively low engagement in both. Brian was highly engaged when reading in a whole group, and was engaged for 78 percent of the time when reading individually.

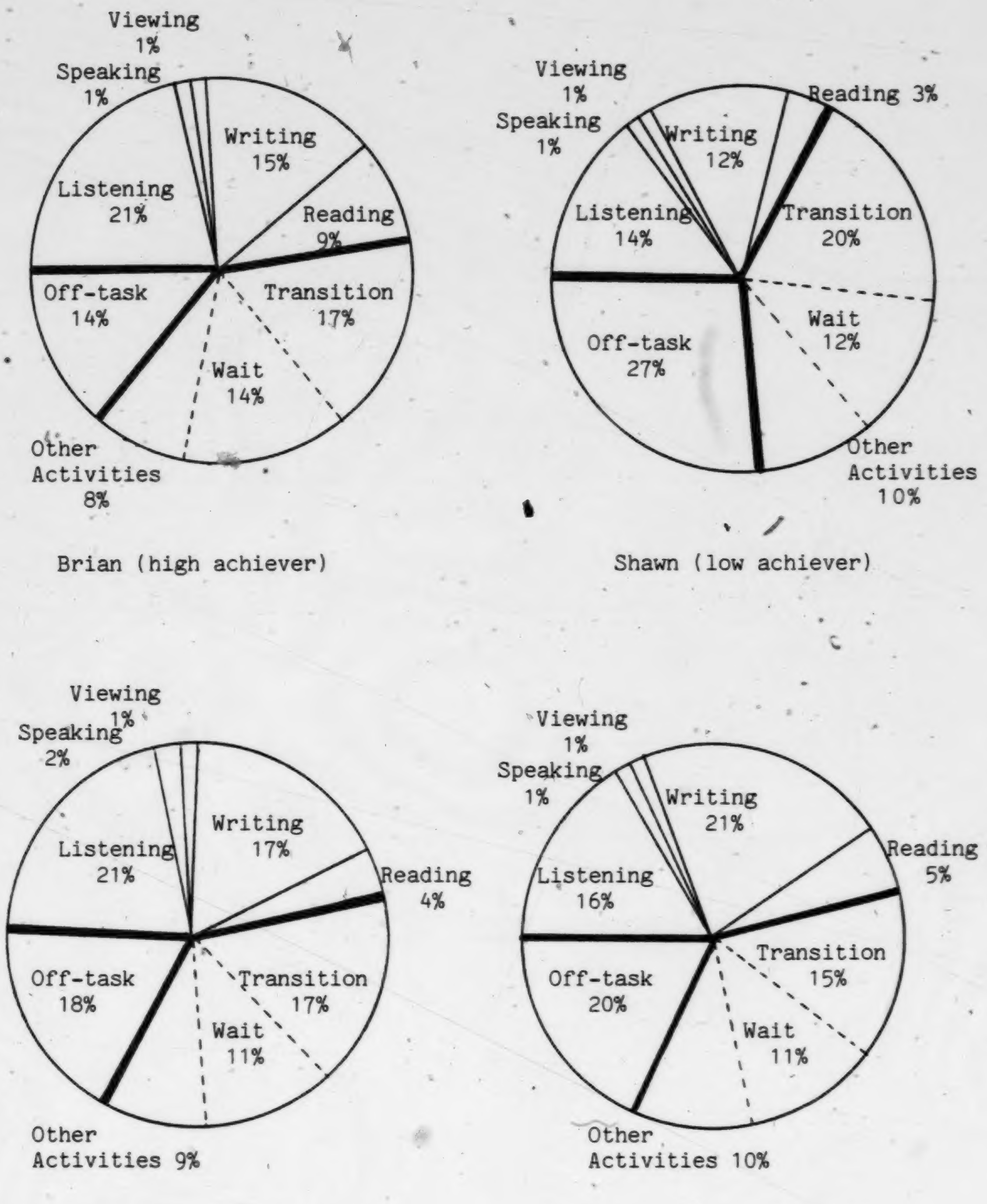
The differences among the pupils seem to indicate that perhaps not all types of reading activities are equally appropriate for various pupils in terms of their ability to hold student attention.

Question Three: Engagement Other Than in Reading

How does each pupil utilize scheduled and allocated Language Arts time other than in engagement in reading?

Since the students observed appeared to be engaged in reading activities for only three, four, five, and nine percent of the total scheduled Language Arts time, it is important to investigate what they were engaged in for the remaining 91 to 97 percent of the time.

The distribution of each target pupil's engagement during the scheduled Language Arts time is presented in the circle graphs of Figure 4. One generalization that can be drawn from the information on these graphs is that each of the four pupils spent approximately 40 percent of the scheduled



Brian (high achiever)

Shawn (low achiever)

Robert (average achiever)

Jerry (average achiever)

Figure 4. Distribution of individual pupil engagement during scheduled Language Arts time (600 minutes).

Language Arts time in transition, waiting, and activities other than Language Arts. Speaking and viewing activities engaged each of the pupils for only two or three percent of the scheduled Language Arts time, while engagement in listening activities ranged from 14 to 21 percent, and writing engagement ranged from 12 to 21 percent. Inappropriate engagement, or off-task behavior, occupied each of the target pupils for 14 to 27 percent of the time scheduled for Language Arts.

Since it was observed that each of the four pupils spent such a large amount of their scheduled Language Arts time in transition, waiting, and other activities, the coding and observations of this category merits further discussion. A child was coded as being in transition when actively preparing for an activity or changing from one activity to another. Examples of transition included: coming into the classroom in the morning, after recess, or after music instruction; putting materials away and getting ready for dismissal; clearing away an activity and preparing for another; taking up a new position (eg. forming a circle on the floor or meeting at a table) for instruction; finding pencils, erasers, books, papers, or crayons; and sharpening pencils. A pupil was coded as waiting when he had finished or could not progress further in his work without assistance or direction. Examples of waiting were seen when a pupil had taken up a new position for instruction but had to wait for others to assemble, when he had completed his assignment and waited for further direction, when he needed assistance to continue or was waiting to have his work checked, when instruction was interrupted by the need to discipline another member of the class, and when the teacher was interrupted by external influences during instruction. Other activities included those that could not be coded as either Language Arts activities or transition or waiting. The activities that fell into this category included: completing a Mother's Day basket; playing a board game which could be coded as involving reading words for only a small part of the time; and filling free time which involved playing with building toys in the sharing corner. Only Brian had four minutes of such free time.

In examining the amount of time that individuals were off-task during the scheduled Language Arts time, it was observed that Brian had least off-task time (14 percent), Shawn had the most (27 percent), and Robert and Jerry had amounts in between (18 percent and 20 percent). In each case, off-task time exceeded engaged reading time, and amounted to between 84 and 166 minutes for each pupil during the week. Inappropriately engaged or off-task time was accumulated by each pupil during listening, writing, and reading activities (see Table 7). When compared to the time available for each of the areas of Language Arts, the high and average achievers were observed to be engaged for at least 75 percent of the time, with the exception of Robert, who was engaged for only 43 percent of his available reading time, and Jerry, who was engaged for only 59 percent of his available listening time. Shawn's larger amount of

Table 7

Engaged Minutes, Allocated Minutes, and Engagement Rates in Various Categories of the Language Arts

Category	Brian			Robert			Jerry			Shawn		
	Engd. Mins.	All. Mins.	Engmt. Rate	Engd. Mins.	All. Mins.	Engmt. Rate	Engd. Mins.	All. Mins.	Engmt. Rate	Engd. Mins.	All. Mins.	Engmt. Rate
Listening	126	164	77	128	170	75	100	170	59	82	140	59
Speaking	6	6	100	10	10	100	6	6	100	6	6	100
Viewing	4	4	100	4	4	100	4	4	100	4	4	100
Writing	90	124	73	104	136	76	126	166	76	74	168	44
Reading	58	70	83	24	56	43	30	40	75	18	32	56
Total	284	368	77	270	376	72	266	386	69	184	350	53
Inappropriately Engaged (Off-Task)	84	368	23	106	376	28	120	386	31	166	350	47

off-task time appears to be a reflection particularly of poor engagement (44 percent) during his allocated writing time, but also of engagement rates of only 56 percent in reading and 59 percent in listening activities. Shawn was observed to have the largest amount of allocated writing time (168 minutes compared to Brian's 124 minutes), but was engaged for the least number of minutes in writing. On Monday, for example, Shawn had 26 minutes available for writing a letter to a pen pal, but was engaged for only 12 minutes, and produced only two lines of the written product. On Thursday, he had 30 minutes available for writing a letter to Mother for Mother's Day, but was observed to be engaged for only two minutes, and produced only four words: "Dear Mom I hpe". In both instances, Shawn was apparently unable to compose a letter independently as most children did, and when the teacher found time, she printed his dictated letter which he was then to copy for the final product. A closer analysis of the 30 minutes Shawn had available for the Mother's Day letter revealed that he spent the first four minutes waiting for the letter paper and getting ready to write, the next eight minutes waiting for the teacher's help to get started, the next two minutes getting help from the teacher as she printed his letter, two minutes copying the letter,and the next 14 minutes in activities including sitting backwards in his chair, wandering around the room, playing on the floor under his desk, swinging around in his chair, socializing with or disturbing other children, and looking about the room. Similar behaviors were observed during

Shawn's off-task time in reading or listening activities.

For Brian, the 14 percent of scheduled Language Arts time that he was off-task was largely taken up with socializing, which was often initiated by other pupils during writing or listening activities. Robert and Jerry were two of the most frequent initiators of this social activity with Brian and with each other, thus accounting as well for some of their off-task time during listening and writing activities. Jerry was a very active person, and seemed to have more difficulty in being attentive during listening activities than during periods when he was able to become involved in writing or reading. His off-task behaviors during listening included such things as playing with gadgets he had brought to school, laying on the floor, disturbing others near him by physical or verbal contact, or doing an alternate activity such as drawing. Much of Jerry's off-task time during reading and writing activities was spent in similar behaviors, in addition to walking about the room and socializing. Robert was less attentive during reading than during listening or writing activities. Unlike the other target pupils, Robert was quite passive, and spent much of his off-task time in inactivity, appearing to be daydreaming or staring into space. He sometimes initiated socializing behavior, but more often was the partner engaged by someone else.

Discussion of Findings Related to Engaged Time

While allocated time can indicate the upper limit of ALT, it is by itself a limited measure (Berliner et al., 1980; Borg, 1980; Jackson, 1977; Rosenshine, 1978, 1981), and the time during which a student is actually observed to be engaged in a learning activity is widely recognized as a more refined indicator of learning. The BTES researchers found that classrooms which allocated more time to Language Arts and mathematics also had higher than average engagement rates in those subjects. In comparing the engagement rates in reading between grade two classrooms, the BTES researchers found a range of from 72 to 81 percent. Similarly, Good and Beckerman (1978), found engagement rates of from 60 to 82 percent among grade six classrooms. In the present study, the four pupils were observed to be engaged for 77, 72, 69, and 53 percent of the time allocated to Language Arts activities. Like the findings of Good and Beckerman (1978), the high achiever was found to have the highest engagement rate, while the low achiever had the lowest. When engaged time in reading within the Language Arts was analyzed, the four pupils had accumulated 58, 24, 30, and 18 engaged minutes during the week, representing only nine, four, five, and three percent of the total scheduled Language Arts time. Engagement rates varied more widely within the reading category of the Language Arts; the high achiever was engaged 83 percent of the allocated reading time, the low achiever 56 percent, and the two average achievers 43 and 75 percent.

In considering what students were doing when they were not engaged, the BTES researchers coded three types of nonengaged activities during allocated time: interim activities (sharpening pencils, turning in and passing out papers, getting books); waiting for help from a teacher or waiting for a paper to be graded; and off-task activities (socializing, daydreaming, misbehaving). They found that, on the average, students were not engaged 16 to 17 minutes of each hour allocated to academic activities. Interim activities and waiting involved seven minutes per hour in the most efficient classrooms, and 10 minutes per hour in the least efficient classrooms. The major difference they found among the classrooms was the amount of off-task behavior, which occupied eight minutes per hour in average classrooms, and ranged from three to 13 minutes per hour in more and less efficient classrooms (Rosenshine, 1981).

In the present study, off-task time, transition and waiting time, and other activities were considered as a portion of the scheduled rather than allocated Language Arts time. The four individual pupils were observed to be off-task from eight to 17 minutes per hour during that scheduled time, with the high achiever having least and the low achiever having most off-task time. Nine to 12 minutes per hour were spent in transition, six to eight minutes were spent waiting, and five to six minutes were spent in other activities.

In discussing the effects of break and transition time on engagement, Rosenshine (1981) points out the negative association that was found in the BTES study, especially at the second grade level. He suggested from this finding that transitions and waiting, rather than constituting a refreshing break for the students, introduce distractions which transfer to less engagement during subsequent periods. The BTES researchers suggested that long and/or frequent breaks may establish a pattern of student "play" that carries over to periods of academic "work", resulting in lower rates of work engagement. In examining Figure 3, a striking similarity can be seen among the four pupils of the present study in terms of the amount of time spent in transition, waiting, and other activities. The level of achievement of an individual pupil does not appear to be related to the amount of time spent in these ways. Rather, it appears to be related to classroom organization and characteristics of children at the first grade level. Perhaps somewhat larger amounts of time in transition are to be expected at this level than at higher grade levels because of the need of young children for change of activity, pace, and physical involvement. This classroom was certainly characterized by a great deal of change and movement. On Monday morning, from 9:00 A.M. until 11:30 A.M., for example, the class was involved in 13 different activities, and changed their seating arrangement four times in addition to entering and leaving the classroom in the morning, at recess, and at noon. The 13 changes in activities were accompanied by periods of waiting for some children, as not all children got ready equally quickly. Another substantial portion of wait time was accumulated by individual pupils while waiting for the teacher to assist them or check their work. This was particularly in evidence during the block of time after recess when the teacher worked with a small group of low or average achievers while the remainder of the class worked individually on completing earlier assignments or at their own pace in their workbooks. While acknowledging the need for some change in activity, considering the maturational level of the pupils of the present study, the 26 to 32 percent of each pupil's scheduled Language Arts time that was spent in transitions or waiting has serious implications for their learning in Language Arts, and particularly in reading, which engaged only three to nine percent of each student's scheduled time.

Success Rate

Questions One and Two: Allocated and Engaged Time at High Success

1. How much time is allocated for each pupil to reading activities in which high success is achieved?

2. How much time is each pupil engaged in reading activities in which high success is achieved?

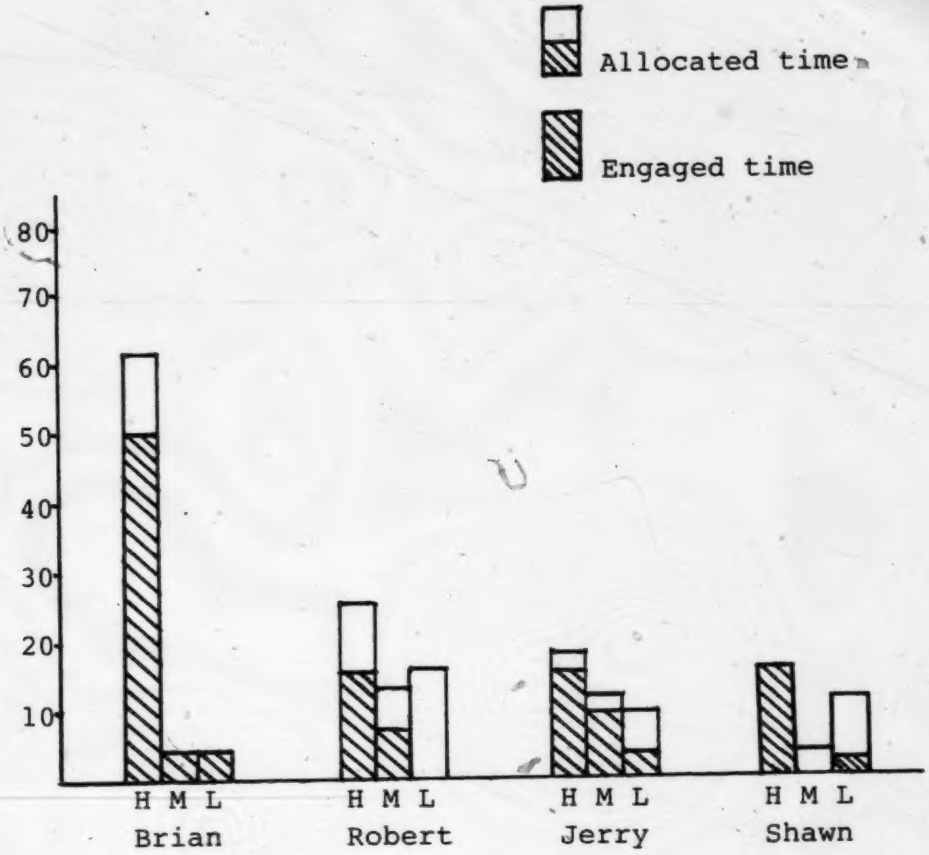
The distribution of allocated and engaged time in reading activities in which each pupil achieved high, medium or low success is depicted in Figure 5. Keeping in mind that the graph shows only reading time, which represented six to 11 percent of the week's scheduled Language Arts time, Figure

5 illustrates that the high achiever had considerably more opportunity for reading activities in which high success was achieved than the other three pupils, and he accumulated the highest number of engaged minutes at high success. Eighty-eight percent of Brian's reading time was allocated to high-success activities, six percent to activities in which he achieved medium success, and six percent to low-success activities. Brian was engaged for 50 of the 62 minutes available at high success, and for the total four minutes available for each of medium- and low-success.

Shawn, the low achiever, had the least opportunity for activities in which he achieved high success. However, he was engaged during the entire 16 available minutes. He appeared to be engaged for only two of the 12 minutes available for reading at low success, and for none of the four minutes available at medium success.

Jerry had slightly more time available for reading at high success, but was engaged for the same amount of time as Shawn. Jerry was engaged for 88 percent of the time he had allocated to high-success reading activities, 83 percent of the time allocated to medium-success activities, and 40 percent of the time allocated to low-success activities.

Robert had 26 minutes available for reading at high success, and was engaged for 16 (61 percent). He appeared to be engaged for eight of the 14 minutes he had available at medium success (57 percent), and for none of the 16 minutes allocated for low-success reading activities.



Rate of Success for Each Pupil

Figure 5. Distribution of allocated and engaged time in reading activities in which pupils achieved high, medium or low success.

Each of the four pupils had their highest engagement rate during reading activities in which high success was achieved, and the low and average achievers had their lowest engagement rate during activities in which they achieved low success. The high achiever had almost all of his reading time available for high-success activities, while the low and average achievers had about half of their reading time available for activities in which they achieved high success. Of the four pupils, the low achiever had the largest portion of his allocated reading time available for low-success activities (37 percent), while the average achievers had approximately one quarter of their allocated time for activities in which they achieved low success. The high and low achiever each had minimal amounts of time available at medium success, but the average achievers had 25 to 30 percent of their allocated reading time available in medium-success activites.

In Table 8 engaged minutes, allocated minutes, and success rate of each pupil in activities involving various reading units are presented. While reliability is limited due to the small number of observations of reading in some of the categories, some patterns do emerge.

Opportunities to read isolated letters included identifying and holding up the correct card showing a consonant blend, and figuring out a number message. Reading isolated words was involved in worksheet and workbook exercises, in spelling exercises which required the pupils to identify words on the blackboard, and in identifying words

Table 8

Engaged Minutes/Allocated Minutes at High, Medium, and Low Success When Utilizing Various Units in Reading

Type of Unit	Brian			Robert			Jerry			Shawn		
	H	M	L	H	M	L	H	M	L	H	M	L
Pictures										2/2		
Letters	4/4				0/2		2/2					
Isolated Words	10/10		2/2	4/6	0/2		2/4	4/4	0/2	8/8		
Isolated Sentences	18/30		2/2	2/6		0/6	4/4	2/2			0/2	0/2
Connected Discourse	18/18	4/4		10/14	8/10	0/10	8/8	4/6	4/8	6/6	0/2	2/10
Total	50/62	4/4	4/4	16/26	8/14	0/16	16/18	10/12	4/10	16/16	0/4	2/12

in the board game. Isolated sentences were almost always presented on worksheets or in the workbook. Opportunities to read connected discourse included passages in the workbook, on the blackboard, or in the USSR booklets.

Brian experienced a high level of success most of the time whether his reading involved letters, isolated words, isolated sentences, or connected discourse. He was also highly engaged in these reading activities, with the exception of the activities involving isolated sentences.

Robert had high success during most of the time that he was engaged in reading isolated words and isolated sentences. He had 10 and eight engaged minutes in reading connected discourse with high success and medium success respectively. Robert was not engaged for any of the six minutes of low success in reading isolated sentences from the blackboard and worksheets, or during the 10 minutes available at low success for reading connected discourse from the workbook and USSR booklets.

Jerry was engaged for half of the six minutes that he had available for reading letters or isolated words with high success. He was engaged for all of the four minutes he had for reading isolated sentences and eight minutes for reading connected discourse with high success. Jerry also exhibited fairly high engagement in the medium-success reading activities including four minutes involving isolated words, two minutes involving isolated sentences, and six minutes involving connected discourse. Jerry's low-success time involved non-engagement for two minutes of reading isolated words and 50 percent engagement in eight minutes of reading connected discourse while working individually in his workbook.

Shawn experienced high success when interpreting pictures or isolated words. In reading connnected discourse, he was highly successful and highly engaged in the six minutes available for reading in the USSR booklets, he was not engaged for the two minutes available at medium success, and was engaged for only two of 10 minutes available for low-success reading of connected discourse from the blackboard and basal reader. Shawn was not engaged in the four minutes he had available at medium- and low-success for reading isolated sentences on the blackboard and on worksheets.

In analyzing the data in Table 8, it appears that lack of engagement was the major factor that accompanied low success. It is impossible to ascertain, however, whether low engagement caused low success, or if low success was responsible for poor rates of engagement. But it is clear that the time that was taken up with either engagement or non-engagement in low-success activities was unavailable for high-success activities that could contribute to a pupil's accumulation of ALT in reading.

Engagement and Success Rate in Writing Activities

Although an analysis of the writing time was not proposed in the questions of the study, it was felt that such an examination would contribute to a more complete understanding of the success rate of the target pupils. Because reading time constituted only six to 11 percent of the scheduled Language Arts time while writing activities made up 20 to 28 percent, because reading and writing activities were often intertwined, and because writing is often considered to be the complementary expressive aspect to the receptive act of reading, an analysis of each pupil's Academic Learning Time in writing activities was considered important, and is illustrated in Figure 6.

Figures 5 and 6 were drawn to the same scale, and thus enabled a comparison of the distribution of allocated and engaged time in reading and writing activities in which individual pupils achieved high, medium, or low success. Most obvious in such a comparison was the larger amount of time available for writing than reading for all the target pupils. The largest difference between allocated reading and writing time existed for Shawn, the low-achieving pupil, and the greatest portion of his writing time was spent in non-engagement in low-success activities.

Brian, Robert, and Jerry were engaged for approximately 75 percent of their time allocated to writing activities, while Shawn's overall writing engagement was 44 percent (see Table 7). A closer analysis of the data indicated that the high and average achievers each accumulated about one hour of engaged writing time at high success, while Shawn accumulated about one half that amount. Jerry also accumulated about one hour of engaged writing time at medium success, while

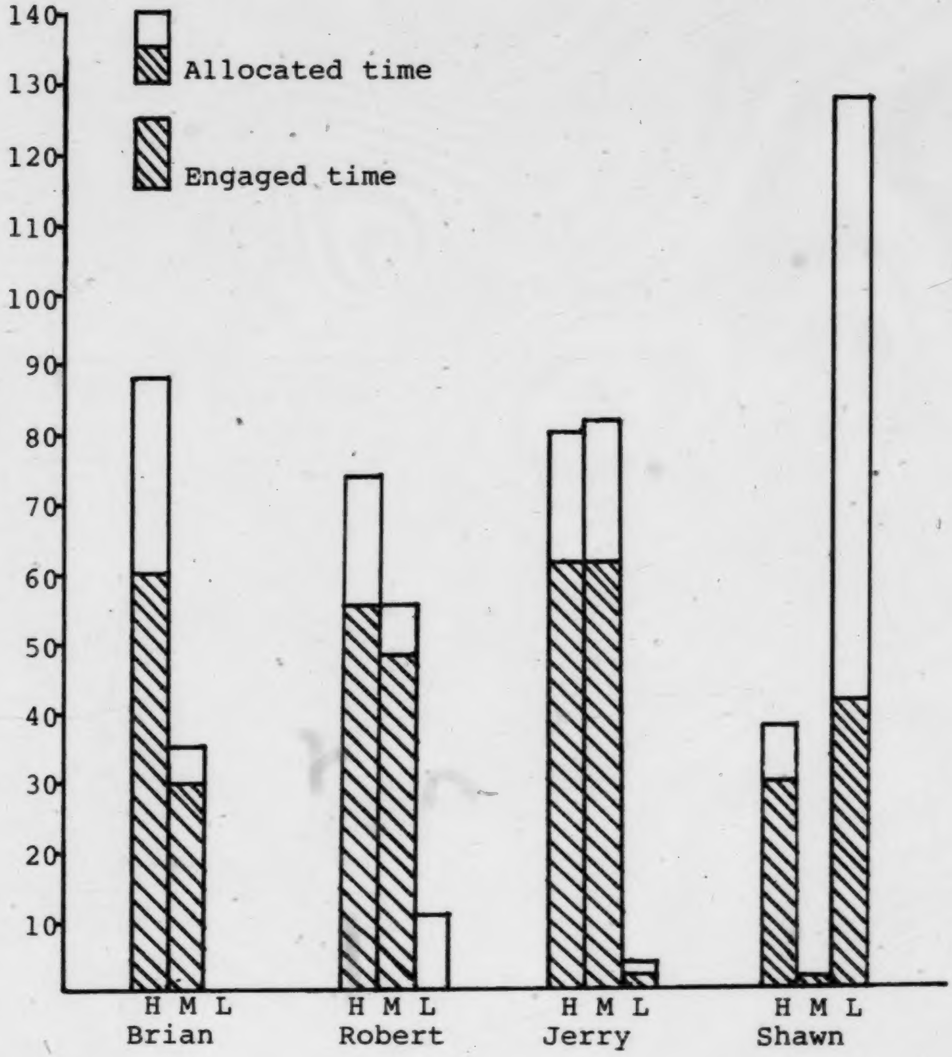


Figure 6. Distribution of allocated and engaged time in writing activities in which pupils achieved high, medium, and low success.

Robert accumulated 48 minutes, and Brian accumulated 30 minutes at medium success (see Figure 6). While Shawn had minimal time available for writing at medium success, he was the only one of the target pupils who had a substantial portion of his writing time (76 percent) available for activities in which he achieved low success. Shawn was engaged for about one third of this low-success time.

The writing time was also examined and represented in Table 9 in terms of the kinds of writing experiences that each pupil had opportunity for and engaged in at each level of success. The majority of Brian's high-success writing time involved letters and isolated words, while most of his medium-success time utilized connected discourse. Activities coded as utilizing letters included a short time for numbering one to 10 in a notebook, printing letter blends on cards to indicate the beginning sound of words pronounced by the teacher (14 minutes allocated), and a "numberese" activity involving substituting numbers for letters in copying and composing messages (A=1, B=2, etc.). The numberese activity was implemented by another teacher during a half-hour teacher exchange within the school as part of Education Week. Brian's writing activities involving isolated words included spelling activities (20 minutes) and workbook and worksheet exercises (28 minutes). Time allocated to writing connected discourse included recopying a letter to a pen pal that he had written the previous week (14 minutes), writing his ideas on the topic "Why a Tree is Nice" (two minutes), and composing a letter to

Table 9

Engaged Time/Allocated Time at High, Medium, and Low Success for Each Pupil When Utilizing Various Units in Writing

Type of Unit	Brian			Robert			Jerry			Shawn		
	H	M	L	H	M	L	H	M	L	H	M	L
Pictures	$\frac{0}{2}$			$\frac{12}{16}$			$\frac{6}{6}$			$\frac{6}{6}$	$\frac{2}{2}$	
Letters	$\frac{28}{34}$			$\frac{16}{20}$	$\frac{10}{12}$		$\frac{28}{34}$	$\frac{2}{2}$		$\frac{18}{20}$		$\frac{8}{30}$
Isolated Words	$\frac{26}{44}$	$\frac{4}{4}$		$\frac{28}{36}$	$\frac{10}{12}$		$\frac{28}{40}$	$\frac{26}{28}$	$\frac{2}{4}$	$\frac{6}{12}$		$\frac{6}{20}$
Isolated Sentences	$\frac{4}{6}$	$\frac{4}{6}$			$\frac{6}{6}$	$\frac{0}{6}$		$\frac{4}{4}$				
Connected Discourse	$\frac{2}{2}$	$\frac{22}{26}$		$\frac{0}{2}$	$\frac{22}{26}$			$\frac{30}{48}$				$\frac{28}{78}$
Total	$\frac{60}{88}$	$\frac{30}{36}$		$\frac{56}{74}$	$\frac{48}{56}$	$\frac{0}{6}$	$\frac{62}{80}$	$\frac{62}{82}$	$\frac{2}{4}$	$\frac{30}{38}$	$\frac{2}{2}$	$\frac{42}{128}$

Mother for Mother's Day (10 minutes).

Robert's high-success writing time involved 28 minutes of engagement out of 36 utilizing isolated words, 16 out of 20 utilizing letters, and 12 out of 16 when the unit of expression involved pictures. His medium-success time was accumulated through relatively high engagement (86 percent) in the allocated 26 minutes involving connected discourse, 12 minutes involving each of isolated words and letters, and six minutes involving isolated sentences. Robert did not appear to be engaged during the six minutes available at low success for writing isolated sentences in a phonics booklet. His work with pictures involved coloring in the workbook (four minutes), drawing in a booklet he was making about Garfield the Cat (10 minutes), and drawing a picture of a tree (two minutes). His work with letters included the activity with blends (12 minutes), numbering in this exercise book (two minutes), and copying and transposing a numberese message (18 minutes). Isolated words included copying and producing spelling words (24 minutes), writing on worksheets (20 minutes), and labeling pictures in his Garfield booklet (4 minutes). Writing isolated sentences involved high engagement in writing dictated sentences about Arbor Day, and low engagement in writing sentences in a phonics workbook. In utilizing connected discourse, Robert had 20 minutes available for recopying his letter to a pen pal, six minutes for writing a letter to Mother, and two minutes during which he was not engaged, for working on a worksheet.

Jerry was engaged for more than 75 percent of the time he had available for high- and medium-success writing tasks. The high-success tasks were similar to Robert's, involving isolated words, letters, and pictures. With medium success, Jerry had small amounts of time in writing activites involving letters and isolated sentences. He was engaged almost all of the 28 minutes that he had available for writing isolated words with medium success, and about two thirds of the 48 minutes he had available for medium-success writing of connected discourse. About half of the time for connected discourse was allotted to each of recopying a letter to a pen pal and composing a letter to Mother. The activities involving isolated words and letters were similar to those available to Robert.

Shawn accumulated 30 engaged minutes of the available 38 in high-success writing activities involving letters, isolated words, and pictures. He appeared to be engaged for the total six minutes available for drawing and coloring, and for 18 of the 20 minutes available for utilizing letters on worksheets dealing with beginning sounds and long a, and in copying "numberese" from the blackboard. He was involved for half of the 12 minutes available at high success in utilizing isolated words on a worksheet. Shawn had minimal opportunity for writing in which he achieved medium success, but approximately three-fourths of his total 168 minutes allocated to writing were in low-success activities. About 60 percent of that time was allocated to writing connected discourse, and involved copying a letter to a pen pal and to Mother, both of which had been scribed by the teacher in earlier consultation with Shawn. Shawn was engaged for 28 of the 78 minutes (36 percent) allocated to these copying activities. Similarly, he was engaged for about one-third of the 50 minutes he had available, with low success, for printing single letters on a short-vowel worksheet and composing a numberese message, and for printing isolated words on worksheets assigned while the majority of the class participated in spelling activities.

Discussion of Findings Related to Success Rate and ALT

Perhaps the most meaningful stance from which to discuss learning time is success rate, because it inevitably involves a consideration of allocated time and engaged time, and appears to be an important variable of learning (Block, 1980). Haverson (1983), in a workshop dealing with acquisition of English as a second language, implied the importance of a high success rate in his description of acquisition of knowledge as an "I plus one" situation, where instruction is based on the pupil's current competence plus the next level. He maintained that the key to fluency in a language and competence in any area of learning is comprehensibility; the only aspect of instruction that will become part of the learner's repertoire of knowledge is that which is understood and is therefore meaningful. The BTES researchers (Fisher, et al, 1980) described the learning student as one who accumulates large amounts of Academic Learning Time, which consists of the time a student is engaged in an academic activity while achieving high success. Major conclusions from the BTES research were that the proportion of time that reading and mathematics were performed with high success was positively associated with student learning in these areas, and that the proportion of time that these activities were performed with low success was negatively associated with student learning (Fisher, et al, 1980). A balance between high-success tasks and more challenging medium-success tasks was considered most appropriate to provide for consolidation and extension of learning, with larger proportions of high-success activities, especially for younger children.

In the present study the high-achiever had most opportunity for reading at high success (62 minutes), and accumulated the largest number of engaged minutes (50 minutes) at high success. The low-achiever had the least opportunity for reading at high success (16 minutes) and accumulated the least number of engaged minutes (16 minutes) at high success. The average pupils each accumulated 16 minutes of engaged time at high success, with an additional eight and 10 minutes at medium success. The amount of ALT that each pupil accumulated in reading, if both high- and medium-success engagement is included, was 54, 24, 26, and 16 minutes during the week. While measurement of time spent reading at the beginning of May is not likely to reflect reading time over the entire year, it is also not likely to reflect less reading than was done earlier in the first grade, when presumably most children were just beginning to learn to read. Hence, an extrapolation over the 180 days of a year probably yields a greatly inflated picture of reading time, but serves to facilitate a comparison between data in this study and previous studies. Using this logic, the four students in this study could be expected to have accumulated a maximum of 162, 72, 78, and 48 hours of ALT in reading over the year. These figures are not out of line with McDonald's findings in 1976 (cited in Smyth, 1979) that the median engaged time in grade two and five mathematics was less than 90 hours. Other BTES researchers suggested that some pupils may be engaged in learning in these areas for less than 40 hours in the school year.

Since relatively little time was allocated to reading activities, while more was allocated to writing activities, and since the two were often difficult to disentangle, ALT was also calculated during writing time. The greatest difference between reading and writing time existed for Shawn, the low achiever, and the greatest portion of his writing time was spent in non-engagement in low-success activities. He accumulated only 30 minutes of engagement at high success, and two minutes at medium success in writing, while the two average achievers accumulated almost balanced portions of high- and medium-success engaged time totaling 124 and 104 minutes each. The high achiever engaged in 60 minutes of writing at high success and 30 minutes at medium success.

When applying the BTES conclusions that the proportion of time a student spends in academic activities while achieving high success is positively associated with learning, and the proportion spent in activities while achieving low success is negatively associated with learning, the four students portray very different pictures of learning in reading and writing activities. The high achiever is in the most favorable position, with the larger portion of his engaged time at high success.

The average achievers are in the medial position for learning. They had less time available for reading than the high achiever,and while most of their engaged reading time was at high success, about one-third to one-half was also at medium success. Proportionate to their total opportunity to read, the average achievers had more time than the high achiever allocated to activities in which they achieved low success (25 to 30 percent). Although the BTES researchers suggested the desirability of somewhat more time in high-success than in medium-success activities, it was found in the present study that the average achievers had as much or almost as much engaged time at medium success as they had at high success in writing activities.

The low achiever is disadvantaged, both from the point of view of having less allocated and engaged time at high success, and also because he had so much of his time allocated to activities in which he achieved low success. If this pattern continues, Shawn may be an example of the pupil referred to by Good and Beckerman (1978), who, partially due to spending less time profitably on academic tasks, falls further and further behind his classmates each year.

CHAPTER 5

SUMMARY, MAJOR FINDINGS AND CONCLUSIONS, AND IMPLICATIONS

In this chapter, the study is summarized in terms of its purpose, design, and research techniques used. Major conclusions centering around allocated time, engaged time and success rate are outlined, and consideration is given to the implications of the study for educational practice and for further research.

Summary of the Study

The purpose of the study was to gather data from which to describe the ways in which four individual pupils near the end of their grade one term made use of time, with particular focus on time spent reading, during the scheduled time for Language Arts instruction in their natural classroom setting.

The study was nonexperimental and descriptive in nature, and data were gathered through classroom observation. A pilot study was conducted for the purposes of refining the coding system and time sampling procedures, and to provide opportunity for the researcher, teacher, and pupils to adapt to the operation of the study in the classroom. In the final coding system, a two-minute time sampling cycle was used. The interval was divided into four 30-second segments, and each of the four pupils was observed, in a predetermined sequence, at the beginning of his 30-second segment. The behavior observed at that moment was coded in terms of whether or not the child was engaged or attentive to the learning task, the area of Language Arts that the task related to, the instructional setting, the partner in speaking or listening activities, the source of the content, the type of unit used in reading or writing activities, whether the task was assigned or chosen, the rate of success in reading and writing activities, and whether the child was involved in transitional activities or waiting. Additional remarks were made to further specify various aspects of the observation. This observation was then generalized to the two minute interval until that particular student was again observed.

The grade one classroom for the study was recommended by the consultant for teacher effectiveness and by the principal, who identified the teacher as an excellent teacher of the Language Arts. The teacher adhered to the philosophy of teaching reading as part of the integrated Language Arts, and she used a thematic approach in implementing this. The teacher was asked to list the children in the class, according to her judgement of their reading achievement, as high, average, or low achievers. Markedly atypical children including those repeating grade one, those who went out of the room part of the time for resource room help, and those who were learning English as their second language were excluded from the study. This exclusion involved five girls and two boys. The sample of four boys was then chosen within the constraints of an assumed normal distribution -- one high achiever, two average achievers, and one low achiever.

The observational data collection took place during the scheduled time for Language Arts each day during the first week of May, 1983, and yielded 600 minutes of observation for each of the target pupils. A second observer was trained, and highly acceptable levels of interobserver agreement were obtained from data collected during two sessions, one prior to and one during the study.

The data were analyzed in terms of several questions structured around the three aspects of Academic Learning Time -- allocated time, engaged time, and success rate.

Major Findings and Conclusions

Allocated Time

Five major conclusions were drawn from an analysis of the data collected for the four target pupils regarding allocated time.

1. Allocated time vs. scheduled time. A large difference was found between the amount of time scheduled for Language Arts and the amount of time that was actually allocated to or available for Language Arts activities. Each of the four pupils was observed to have from 350 to 386 minutes allocated to Language Arts activities out of

the scheduled 600 minutes.

2. Transition, waiting, and other activities. Relatively large portions of time scheduled for Language Arts were unavailable for Language Arts activities because they were taken up by transition, waiting and other non-Language Arts activities. From 36 to 41 percent of the scheduled Language Arts time, representing 214 to 250 minutes, was taken up in these ways, with relatively little variation among the four pupils.

3. Distribution of allocated time among various aspects of Language Arts. Most of the time that was available to Language Arts activities was allocated to listening (40 to 45 percent) and writing activities (34 to 48 percent), while considerably less time was available for reading (nine to 19 percent), and minimal amounts of time were allocated to speaking (two percent) and viewing (one percent).

4. Time available for reading. Relatively small amounts of time were allocated to reading activities. The four target pupils were observed to have totals of 70, 56, 40, and 32 minutes available for reading activities during the week, averaging six to 14 minutes per day. Within their time for reading activities, each pupil was observed to have opportunity to read connected discourse for 18 to 36 minutes during the week, averaging four to seven minutes per day. Almost all of the time that was allocated to reading involved silent rather than oral reading activities.

5. Time allocation and pupil achievement level. The high achiever had the largest amount of time available for reading, and the low achiever had the least. In writing activities, the low achiever had the largest amount of allocated time, while the high achiever had the least. The low achiever had less time available for listening activities than the high or average achievers. Similar amounts of time were available to all the target pupils in speaking and viewing. While the low achiever spent slightly more time in transition, the high achiever spent more time waiting than did the other pupils.

Engaged Time

Engagement was analyzed in terms of the percentage of the scheduled Language Arts time pupils appeared to be attentive to various activities. Engaged time was also expressed as a percentage of allocated time in each Language Arts activity. Engagement rate in the various kinds of reading activities was also considered. Several conclusions were drawn from the data regarding engaged time.

1. Engagement in transition, waiting, and other non-Language Arts activities. Each pupil spent approximately 40 percent of the scheduled Language Arts time engaged in transition, waiting, and other non-Language Arts activities. It was concluded that the similarity among the four pupils in this regard suggested that the amount of time spent in transition, waiting, and other activities was a function of classroom organization and the developmental level of

these pupils in first grade rather than a function of individual differences among the pupils.

2. Off-task time. Pupils observed were off-task from 14 to 27 percent of the scheduled Language Arts time. The 84 to 166 minutes of off-task time was part of the time allocated to Language Arts activities, and represented from 23 to 47 percent of this time. Of the four pupils, the high achiever spent least time off-task and the low achiever spent the most time off-task, suggesting a positive relationship between level of achievement and time on-task.

3. Engaged time in reading. The four pupils observed were engaged in reading activities for a very small part of the time scheduled for Language Arts. Engaged time in reading activities for each pupil was 18, 24, 30, and 58 minutes for the week, representing three, four, five, and nine percent of the time scheduled for Language Arts. During the time that each pupil had available for reading, the high achiever and one average achiever had the highest engagement rates, at 83 percent and 75 percent. The low achiever was engaged for 56 percent of his available reading time, and one average achiever had the lowest engagement rate, at 43 percent. The high achiever had 100 percent engagement when he had opportunity to read connected discourse, whereas one average achiever and the low achiever were engaged for half or less of the time allotted for them to read connected discourse. The high achiever had his

best rate of engagement when reading in a whole-group situation, whereas the low achiever had his best rate of engagement while working individually. Implications are that the type of reading activity and the type of setting accompanied by high rates of engagement appear to vary among individual students.

4. Engagement in other areas of Language Arts. Considerably more time was spent engaged in writing than in reading activities. The pupils observed were engaged in writing activities for 12 to 21 percent of the scheduled Language Arts time, and for 21 to 23 percent of the time each had allocated to Language Arts activities. During their time available for writing activities, the high and average achievers were each engaged for approximately 75 percent of the time, but the low achiever was engaged for only 44 percent of his time available for writing. The low achiever's reduced engagement rate resulted in his accumulation of the fewest engaged minutes in writing, even though he had the largest number of minutes allocated to writing of the four target pupils.

The pupils were observed to be engaged in listening activities from 14 to 21 percent of the scheduled and 23 to 34 percent of their allocated Language Arts time. The high achiever and one average achiever had engagement rates of approximately 75 percent during listening activities, while the other average achiever and the low achiever had lower engagement rates of about 60 percent.

Each of the four pupils had minimal opportunity for speaking or viewing during the scheduled Language Arts time, and hence few engaged minutes were accumulated in these areas.

Success Rate and ALT

Success rate was analyzed in terms of the reading and writing activities. Success rate was calculated by comparing the number of minutes that a pupil was engaged in a particular activity while achieving high, medium, or low success with the number of minutes available for such involvement. Since analysis of success rate involves consideration of engaged time and allocated time, it essentially yields an analysis of Academic Learning Time. The following conclusions were drawn from this analysis, in which ALT included high- and medium-success time.

1. ALT in reading activities. Each of the pupils accumulated relatively small amounts of ALT in reading activities and differences existed between the pupils of various achievement levels in this accumulation.

In reading activities, the high achiever had more than twice as much ALT (54 minutes) as the average achievers (24 and 26 minutes), and more than three times as much as the low achiever (16 minutes). Of their total ALT in reading activities, reading of connected discourse constituted 22 minutes of ALT for the high achiever, 18 and 12 minutes for the average achievers, and six minutes for the low achiever. Almost all of the high and low achievers' ALT in reading activities involved high success, whereas the average achievers had a substantial portion at medium success. Only five percent of the high-achiever's reading time involved low success activities (four minutes), whereas about 25 percent of each average achiever's (16 and 10 minutes), and 37 percent (12 minutes) of the low achiever's reading opportunities involved activities in which low success was achieved. Considering these factors, it was concluded that the high achiever was in the best position to progress in reading, chiefly due to his greater time allocation to reading activities generally, and secondly, because most of the allocation involved activities in which he achieved high success. The low achiever was most disadvantaged in improving his reading because he had the least time available for reading activities generally, and in addition, he had proportionately more of his reading time allocated to activities in which he achieved low success. Both average achievers were limited in their accumulation of ALT mainly by the small amount of reading time available, but they also had about a quarter of their reading time for low-success activities during which time they exhibited low levels of engagement.

2. ALT in writing activities. The high and average achievers were in a more advantageous position than the low achiever to benefit from time allocated to writing. However, corresponding differences in total allocated writing time did not appear to be the factor responsible for differences in ALT in writing, as the high achiever actually

had least time (124 minutes) and the low achiever had most time (168 minutes) available for writing. Rather, the major factor appeared to be the appropriateness of the writing task for the individual pupil, coupled with engagement rate. While the high and average achievers had minimal amounts of time available for writing with low success, the low achiever had 128 minutes, and he was engaged for only 42 of these. He had only 40 minutes available for writing at high and medium success, while the high achiever had 124 minutes, and the average achievers had 130 and 162 minutes. The high achiever accumulated 90 minutes of ALT, the average achievers accumulated 104 and 124 minutes, and the low achiever accumulated 32 minutes of ALT in writing activities.

3. Comparison of ALT in reading and writing activities. There appeared to be a trade-off as illustrated in Table 10, between time allocated to reading and writing activities for each pupil: the more time a pupil had for writing, the less he had for reading. While substantial differences appeared between pupils in their time allocations to reading activities (32 to 70 minutes) and to writing activities (124 to 168 minutes), only an eight-minute difference (192-200 minutes) appeared between pupils in their totals of the two. Part of the explanation seems to lie in the fact that many of the reading opportunities were presented in workbook or worksheet activities, and pupils who completed their writing activities quickly had more time

Table 10

Comparison of Minutes Allocated to Reading Activities and Writing Activities and Accumulation of ALT in These Areas

Area of Language Arts	Brian		Robert		Jerry		Shawn	
	Allocated Minutes	ALT	Allocated Minutes	ALT	Allocated Minutes	ALT	Allocated Minutes	ALT
Reading Activities	70	54	56	24	40	26	32	16
Writing Activities	124	90	136	104	166	124	168	32
Total	194	144	192	128	206	150	200	48

for these reading activities.

When reading activities were considered separately from writing, the high achiever accumulated more than twice as much ALT (54 minutes) as the average achievers (24 and 26 minutes), and more than three times as much as the low achiever (16 minutes). When reading and writing were considered as an aggregate, the differences in ALT were narrowed between the high achiever and the average achievers (128 to 150 minutes). However, the low achiever accumulated a total of approximately one-third as much ALT in reading and writing activities as each of the other three pupils. The picture of the low achiever as a learner was even less encouraging when time allocated to low-success activities was considered. He had 70 percent (140 minutes) of his total allocated reading and writing time (200 minutes) available for activities in which he achieved low success. Only two percent of the high achiever's time, and six and 11 percent of the average achievers' time was allocated to low-success reading and writing activities.

It was concluded that the low achiever accumulated the least ALT in reading and writing activities largely due to low levels of engagement and success in writing activities and concomitant limited allocation of time to appropriate reading activities.

Implications from the Study

Implications for Educational Practice

1. Reducing time spent in transition, waiting, and other activities. Perhaps the most obvious implication of the present study is the need to make more of the scheduled Language Arts time available to pupils for the accumulation of ALT by reducing the large expenditure of time in transition, waiting, and activities other than Language Arts. While some time is necessary for pupils to come into the classroom and get settled in the morning, after recess or lunch breaks, and after being out of the classroom for any number of reasons, this time can undoubtedly be reduced. The "businesslike" direction of the classroom suggested by Rosenshine (1979) may be one way to reduce the amount of time needed for pupils to become attentive for instruction. The teacher is usually in a position to plan in such a way that unnecessary movements to areas outside the classroom are kept to a minimum. In addition, while some change in physical position and type of activity is obviously necessary for young children, keeping these changes to the minimum appropriate to the developmental level of particular pupils in a class can undoubtedly retrieve some transition time for academic learning.

Waiting time frequently appears to result from the fact that a class is made up of individual pupils who vary in their needs, abilities, and characteristics. The teacher is caught between organizing for instruction and providing for individual needs. Differentiating learning experiences is a necessity if pupils are to accumulate ALT, in which success rate is a regulatory factor; not all pupils in a class are able to achieve high success on the same activities. On the other hand, when instruction is differentiated, the teacher must divide his/her time between the groups or individuals working on different learning tasks. It seems likely that waiting time can be reduced if instructions given to the whole group at the beginning of an activity include directions concerning alternate activities upon pupil completion of the task and the course of action pupils are to follow if difficulties are encountered. These instructions need not be repeated daily if a routine is established and followed consistently. Increasing the number of teaching personnel may be another approach to increasing pupil academic engagement, especially in differentiated instruction. This aspect can be partially attended to at the administrative level, where aides can be assigned, resource personnel can be utilized, and class sizes can be kept to a minimum with consideration given to the types of pupils and their needs in any one class. Teachers themselves can often arrange for parent volunteers or older student tutors to assist in supervising various individuals or groups within the classroom.

Serious consideration should be given by school administrators and teachers to the legitimacy of taking scheduled Language Arts time for activities which have little to do with learning in the Language Arts. Perhaps many activities such as track and field meets, social instruction films or presentations, and art activities could be more appropriately planned as an integral part of the subject area to which they most closely relate.

2. Increasing allocated time in reading. If, as implied by the conclusions of the BTES research, the amount of time spent engaged in reading with high success is positively associated with learning to read, if the small amounts of such time found for the individuals of this study are more widespread, and if helping children to learn to read is one of the primary goals of teaching during the early school years, then it is imperative that educators strive to achieve an increase of ALT for individual students in reading. The results of this study indicate that while scheduling ample time for Language Arts is essential, it is not sufficient to guarantee Academic Learning Time for the Language Arts collectively, and certainly not for the individual areas of reading, speaking, listening, viewing, and writing. The necessity for increasing the amount of time actually allocated to Language Arts activities by reducing time spent in transition, waiting, and other activities has been discussed. Within the time that is then allocated to the broad area of Language Arts, teachers need some kind of guideline regarding the proportions that ought to be allocated for learning in

the various areas of the Language Arts at various grade levels. Should speaking and viewing be given equal emphasis and time as reading, writing, and listening within the Language Arts program, and should the proportions be the same for grades one through six? How much of the time should be allocated to reading, and how important is it to allocate time for reading connected discourse as opposed to reading isolated words or isolated sentences? There are no easy answers to these questions, but it seems logical that if teachers believe that ALT is positively associated with learning, they will strive to allocate time to the various facets of the Language Arts and to various activities within each area proportionate to their perception of the importance of each for learning according to the needs of the particular groups of students.

The finding that the high achiever had most time allocated to reading, while the low achiever had least, indicates a need to evaluate the bases for time allocation to individual pupils. It seems likely that the allocation of less time for reading to a pupil who is behind his classmates in reading skill can only intensify the problem.

3. Increasing engagement rates. Learning demands the engagement of the learner, and one of the classic challenges of the classroom teacher continues to be to maximize student engagement rates. Reduction of off-task time through effective organization for instruction is often difficult to achieve in a classroom of students who

have individual characteristics and needs. The possibility of utilizing additional personnel and reducing class sizes has already been discussed. Consideration must also be given to the finding in this study that some individuals appeared to have higher engagement rates in a whole group setting while others had their best engagement during individual tasks. Engagement rates appeared to be higher when pupils were experiencing high or at least medium success, indicating the importance of appropriate levels of difficulty in learning tasks for individual pupils in maximizing engagement. Various sources of content and types of units were associated with different engagement rates for different students, indicating that the same reading materials are unlikely to be equally appropriate for all pupils in a class.

4. Increasing success rate. According to the concept of ALT, sufficient allocated time and high rates of engagement must also be accompanied by much high and some medium success. Classroom teachers are challenged to provide relevant and worthwhile experiences in reading and writing in which pupils with varying characteristics and abilities can and do achieve high success. Students who are engaged for substantial portions of time in reading at an "I plus one" level, which includes their present competency plus some challenge at the next level, will experience a high degree of "comprehensibility" in their work (Haverson, 1983), and should be achieving with high

and medium success. Once again, the teacher is in the position of balancing the need for individualizing instruction with the necessity of grouping for instruction in classroom organization. Serious consideration must be given to continuous evaluation of the rate of success individual pupils achieve in various kinds of activities, and efforts must be made to rechannel a pupil who is operating at a frustration level in a particular activity into alternate educationally-sound activities in which higher levels of success can be achieved. As was seen in the case of the low achiever in this study, considerable time was allocated to writing activities, but little learning was achieved due to low engagement and low success. With the current emphasis on writing even at the beginning school level, educators must be aware that not all of the writing activities that bring commendable results from many students are justifiable for all pupils. If a pupil is unable to achieve high or medium success in a task, be it in writing, reading, or other areas, the value of that activity for that pupil must be questioned, and thought must be given to either altering the demands of the activity or postponing it until the child is more able to cope successfully with it.

Implications for Future Research.

Research up to the present time indicates that ALT is an important factor in student learning. However, questions regarding how much academic engaged time per day is optimal have not been answered. No data are available to indicate appropriate amounts of ALT for individual children of various ages with differing characteristics and capabilities in various subjects. In the Integrated Language Arts program, classroom teachers have little guidance from research or curriculum guides concerning appropriate allocation of time to the various aspects of the Language Arts. Both descriptive and experimental research can contribute to a better understanding of issues related to questions of time and learning.

Descriptive research. More descriptive research data are needed for the formation of a baseline from which projections can be made concerning appropriate allocated and engaged time for reading and other Language Arts activities for different pupils at different levels.

1. This study could be replicated in other classrooms using an Integrated Language Arts approach as well as in classrooms using a more traditional approach to teaching reading, writing, listening, and speaking. Collection of data from observations of numerous individual pupils across many classrooms could ultimately permit widely generalizable conclusions regarding how time is spent in school.

2. Further investigation is needed of the relationships between individual pupil characteristics and use of time in various Language Arts activities. Studies comparing allocated and engaged time of pupils at the

beginning and end of the first grade could yield data that contribute to the understanding of appropriateness of activities for pupils at various stages of their development. Longitudinal studies of particular pupils over their elementary school years could provide data from which to ascertain patterns of pupil use of time over several years and in different kinds of classrooms.

3. Considering the multiplicity of demands on primary teachers' time and attention, a fruitful line of investigation might be to investigate the similarities and differences between teachers' beliefs concerning the ways in which allocated time, engaged time, and success rate operate in their classrooms, and what is actually observed to take place.

4. More in-depth research on time spent in transition, waiting, and off-task activities is needed to determine some of the variables that appear to affect these. The emergence of similarities and differences across developmental levels and across classrooms utilizing various organizational patterns could ultimately add to efficiency in use of classroom time.

5. Further research is needed in the area of clarifying the relationship between reading activities and writing activities in terms of their contribution to children becoming proficient readers.

Experimental research

1. Experimental research is needed to investigate the relationships between the components of ALT, and how changes in one of allocated time, engaged time, or success rate affect the other variables.

2. There is need for investigation of the optimal frequency of changes of activity and location for children possessing different sets of characteristics and at different developmental levels during various kinds of instruction.

3. Experimental research probing the effects on achievement of increasing allocated time, engaged time, and success rate in different kinds of reading activities has the potential of clarifying desirable priorities for classroom teachers charged with the responsibility of helping young students become proficient readers.

Concluding Statement

In discussing similarities between time and money, Guthrie (1980) noted that both can be spent, saved, or squandered, or they can be invested; in schools, time should presumably be invested in learning and knowledge.

Pupils are the agents through whom and in whom the investment of time yields its payoff. However, teachers are the managers of the investment, and as such, have a great deal of control of and responsibility for the ways in which pupil time is spent. In terms of producing competent readers, the teacher's first responsibility is to schedule time for reading, but then also to ensure that scheduled time is actually allocated to reading. The second obligation is to hold the attention or engagement of the pupils to the reading tasks as effectively as possible. And thirdly, the teacher is charged with the responsibility of ensuring that individual pupils are learning optimally by engaging in educationally-sound reading activities in which they are achieving high success. Although these responsibilities constitute a tall order for teachers, the effectiveness with which they are executed will undoubtedly be reflected in the payoff -- students utilizing time efficiently in becoming proficient readers.

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APPENDIX

SAMPLE CODING SHEETS

Coding Sheet # 1 Date Fri. May 6 Lesson L.A. Time 9:00 - 9:10

Pupil	Time		Degree of Engagement			Area of L.A.						Instruct. Setting			Partner		Source of Content							Type of Unit					Assigned or Chosen			Rate of Success			Other Activ.		Remarks
	Min	Sec	D	DN	CT	L	S	V	W	R O	R S	WG	SG	I	T	P	WS	WB	BR	LB	Ch	BB	O	P	L	IW	IS	CD	Assign. G	Assign. S	Ch	H	M	L	T	W	
Brian	00	00	✓			✓						✓				✓																					to Keith reading
	02			✓		✓						✓			✓																						playing w/ Garfield in desk
	04																																		✓		getting out paper
	06																																			✓	for others to sharpen pencils
	08			✓					✓			✓											✓			✓				✓		2					copying "Arbor Day" - playing w/ Garfield.
Robert	00	30	✓			✓						✓			✓																						discussing sequence (trees) sent.
	02	30	✓			✓						✓			✓																						"
	04	30																																		✓	while others get ready w/paper
	06	30																																	✓		sharpening pencil
	08	30	✓						✓			✓											✓			✓				✓		2					copying "Arbor Day"
Jerry	01	00		✓		✓						✓			✓																						playing w/ balloon
	03		✓							✓		✓											✓				✓			✓		✓					rdg. Sent. held by other child
	05																																			✓	while others get pencils
	07			✓		✓						✓			✓																						playing w/ balloon
	09			✓					✓			✓											✓				✓			✓		✓					playing w/ stuff on desk
Shawn	01	30																																		✓	holding #1 of sequence
	03	30																																	✓		getting out red booklet
	05	30																																	✓		" - not doing anything
	07	30																																	✓		"
	09	30	✓						✓					✓			✓							✓						✓			3				coloring

Degree of Engagement
D = Definitely engaged
DN = Definitely not engaged
CT = Can't tell

Area of Language Arts
L = Listening
S = Speaking
V = Viewing
W = Writing
R(O) = Oral Reading
R(S) = Silent Reading

Instructional Setting
WG = Whole group
SG = Small group
I = Individual

Partner
T = Teacher
P = Pupil

Source of Content
WS = Worksheet
WB = Workbook
BR = Basal reader
LB = Library book
Ch = Chart
BB = Blackboard
O = Other

Type of Unit
P = Picture
L = Letter
IW = Isolated words
IS = Isolated sentences
CD = Connected discourse

Assigned or Chosen
Assigned G = General
S = Specific
Ch = Chosen

Rate of Success
H = High
M = Medium
L = Low

Other Activities
T = Transition
W = Wait

Coding Sheet # 2 Date Fri. May 6 Lesson L.A. Time 9:10 - 9:20

Pupil	Time Min	Time Sec	Degree of Engagement D	DN	CT	Area of L.A. L	S	V	W	R O	R S	Instruct. Setting WG	SG	I	Partner T	P	Source of Content WS	WB	BR	LB	Ch	BB	O	Type of Unit P	L	IW	IS	CD	Assigned or Chosen Assign. G	Assign. S	Ch	Rate of Success H	M	L	Other Activ. T	W	Remarks
Brian	10	00		✓					✓			✓											✓					✓		✓		?	✓				write "Today is May 6" - lkg. around
	12		✓						✓			✓											✓					✓		✓		?	✓				write sent. re. Arbor Day
	14																																			✓	finished writing sentence
	16		✓						✓			✓											✓					✓		✓		?	✓			.	dictation - paragraph Arbor Day
	18																																			✓	finished printing
Robert	10	30	✓						✓			✓											✓					✓		✓			?✓				finishing printing - "Today..."
	12	30																																		✓	finished writing sentence
	14	30	✓						✓			✓											✓					✓		✓			?✓				dictation " "
	16	30																																		✓	finished sentence dictated
	18	30	✓						✓			✓									•		✓					✓		✓			?✓				writing dictated sentence
Jerry	11	00	✓						✓			✓											✓					✓		✓			?✓				finishing printing "Today".
	13		✓						✓			✓											✓					✓		✓			?✓				writing sentence re Arbor Day
	15		✓						✓			✓											✓					✓		✓			?✓				dictation " " "
	17		✓						✓			✓											✓					✓		✓			?✓				
	19			✓		✓						✓			✓																						tchr dictating - playing w/ balloon
Shawn	11	30	✓						✓			✓					✓							✓						✓		?					coloring
	13	30																																		✓	hand up - waiting for help
	15	30		✓							✓			✓			✓											✓		✓			?✓				follow printed directions
	17	30	✓								✓			✓			✓							✓						✓		✓					looking at pictures on page
	19	30		✓							✓			✓			✓										✓			✓			?✓				playing in desk

Degree of Engagement
D = Definitely engaged
DN = Definitely not engaged
CT = Can't tell

Area of Language Arts
L = Listening
S = Speaking
V = Viewing
W = Writing
R(O) = Oral Reading
R(S) = Silent Reading

Instructional Setting
WG = Whole group
SG = Small group
I = Individual

Partner
T = Teacher
P = Pupil

Source of Content
WS = Worksheet
WB = Workbook
BR = Basal reader
LB = Library book
Ch = Chart
BB = Blackboard
O = Other

Type of Unit
P = Picture
L = Letter
IW = Isolated words
IS = Isolated sentences
CD = Connected discourse

Assigned or Chosen
Assigned G = General
S = Specific
Ch = Chosen

Rate of Success
H = High
M = Medium
L = Low

Other Activities
T = Transition
W = Wait

Coding Sheet # 3 Date Fri. May 6 Lesson L.A. Time 9:20-9:30

Pupil	Time		Degree of Engagement			Area of L.A.						Instruct. Setting			Partner		Source of Content							Type of Unit					Assigned or Chosen			Rate of Success			Other Activ.		Remarks
	Min	Sec	D	DN	CT	L	S	V	W	R O	R S	WG	SG	I	T	P	WS	WB	BR	LB	Ch	BB	O	P	L	IW	IS	CD	Assign. G	Assign. S	Ch	H	M	L	T	W	
Brian	10	00		✓					✓					✓									✓	✓						✓		✓					draw pict. of tree - talking to friends
	12																																		✓		coming to floor
	14																																			✓	for lesson to start
	16		✓								✓	✓										✓				✓				✓		✓					choosing correct word (r) sound
	18		✓								✓	✓										✓				✓				✓		✓					rdg. words on board - hand up
Robert	10	30	✓						✓					✓									✓	✓						✓		✓					making pict. of tree
	12	30																																	✓		coming to floor
	14	30		✓		✓						✓			✓																						looking around
	16	30		✓							✓	✓										✓				✓				✓		✓					words on BB to answer riddle
	18	30	✓								✓	✓										✓				✓				✓		✓					"
Jerry	11	00	✓						✓					✓									✓	✓						✓		✓					making pict. of tree
	13		✓						✓					✓									✓	✓						✓		✓					"
	15		✓						✓					✓									✓	✓						✓		✓					"
	17			✓							✓	✓										✓				✓				✓		✓					fooling around in desk
	19		✓								✓			✓								✓				✓				✓		✓					circling word on BB
Shawn	11	30																																	✓		going to bathroom
	13	30																																	✓		at bathroom
	15	30		✓		✓						✓			✓																						at Jerry's desk - not watching
	17	30		✓		✓						✓			✓																						fooling at Jerry's desk
	19	30	✓								✓	✓										✓				✓				✓		✓					circling word on board

Degree of Engagement
D = Definitely engaged
DN = Definitely not engaged
CT = Can't tell

Area of Language Arts
L = Listening
S = Speaking
V = Viewing
W = Writing
R(O) = Oral Reading
R(S) = Silent Reading

Instructional Setting
WG = Whole group
SG = Small group
I = Individual

Partner
T = Teacher
P = Pupil

Source of Content
WS = Worksheet
WB = Workbook
BR = Basal reader
LB = Library book
Ch = Chart
BB = Blackboard
O = Other

Type of Unit
P = Picture
L = Letter
IW = Isolated words
IS = Isolated sentences
CD = Connected discourse

Assigned or Chosen
Assigned G = General
S = Specific
Ch = Chosen

Rate of Success
H = High
M = Medium
L = Low

Other Activities
T = Transition
W = Wait